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ORIGINAL ARTICLES

CHRONIC FOCAL INFECTIONS AND THEIR ETIOLOGIC RELATIONS TO ARTHRITIS AND NEPHRITIS *

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There is nothing new in the principle involved in the subject of the paper. It has long been known that acute rheumatic joint infections are the result frequently of a primary infection of the faucial tonsils, or tissues about them. Pneumonia is doubtless the frequent result of the sudden change of a non-virulent to virulent type of pneumococcus whose common habitat is the upper respiratory passages in city dwellers. It has been shown that a common source of infection in epidemic cerebrospinal meningitis is the nasal mucous surfaces. Acute endocarditis also has its source, in many instances, from the faucial tonsils. Acute parenchymatous nephritis is frequently the result of the toxemia of diphtheria. Acute gonorrheal arthritis has its source in a focal infection of the urinary or genital tract. A local tuberculous focus may cause systemic infection.

SITE OF FOCAL INFECTION

1. The faucial tonsils, the peritonsillar tissues and supratonsillar fossæ. In this may also be included the lymphoid tissue embraced in the pharyngeal tonsil and elsewhere in the nasopharyngeal space. The lymphoid tissue comprised in the tonsillar tissues is most abundant in childhood, and frequently becomes atrophic in adult life. The site of this tissue subjects it to infection of various kinds. The abundance of this tissue in the child probably explains the frequency of infections like acute rheumatic fever, diphtheria, tonsillitis, etc., in the earlier periods of life. The fact that chronic, septic, focal infection may lie latent in the tonsillar tissue has not been generally recognized. That this focal infec-

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tion may produce a chronic systemic disease is established by clinical experimentation.

2. Abscesses of the gums and alveolar sockets, pyorrhea alveolaris and septic types of gingivitis may also cause systemic disease of various types.

3. The various sinuses about the head — maxillary, ethmoidal, sphenoidal and frontal, may also harbor focal infection and cause systemic disease.

4. Bronchiectatic and pulmonic cavities due to chronic disease may also produce chronic systemic infections.

5. Chronic ulcers of the gastro-intestinal tract, especially of the bowels. This source is probably rare and more problematic than that of any other systemic infection.

6. Chronic appendicitis. Chronic catarrhal appendicitis may produce not only the local discomforts including disturbance of the functions of the digestive organs, but it may also be a focal source of systemic infection with the damage done chiefly to the cardiovascular apparatus.

7. Cholecystitis and cholangeitis with or without calculi have been recognized as a source of systemic infection, the brunt of the damage apparently falling on the cardiovascular apparatus and kidney.

8. The urinary tract including the pelvis of the kidney, the bladder and more particularly the prostate gland. Pyelitis of whatever type, even when there is only moderate obstruction of the drainage of the kidney pelvis, may produce myositis, arthritis, etc.

9. Genital tract. The prostate and seminal vesicles are a common source of infection of gonorrheal arthritis and probably of ordinary septic infections. The Fallopian tubes and uterus are less common as a source of chronic systemic disease in all probability. It is said that the parametrium is a more common focal source of infection.

10. Local, septic, submucous and subcutaneous foci anywhere in the body may be a source of systemic disease.

THE SYSTEMIC RESULTS OF FOCAL INFECTION

1. Chronic arthritis is one of the most common results.
2. Nephritis both acute and chronic.
3. Cardiovascular degenerations.
4. Chronic neuritis and myalgia (myositis).

The studies and experiments embodied in this paper are limited to the arthritides and to subacute and parenchymatous nephritis. Of these chronic, deforming arthritis, commonly known as arthritis deformans, a chronic osteo-arthritis of hypertrophic or atrophic type, comprise the majority of the studies. Next to the arthritides the largest number of cases comprises subacute parenchymatous nephritis and chronic parenchymatous nephritis.

The work has been done on private and clinic patients in the Presbyterian Hospital. The bacteriologic and histologic studies and the animal experiments have been carried on by Dr. D. J. Davis and by Dr. Homer K. Nicoll.

Mode of Procedure.—The patient presenting evidences of chronic cardiovascular disease, nephritis or arthritis, is carefully examined in reference to previous disease which might be related to the existing condition and also for the existence of focal infections somewhere in the body. When a focal point of infection has been located and seems rationally related to the systemic infection, it is removed if possible, surgically or by some other means. An attempt is made to thoroughly eradicate the focus of infection. Appendectomy, drainage of the gall-bladder or of the pelvis of the kidney is insisted on not only because of local discomforts related to these diseases, but quite as important, to prevent further systemic degeneration. The prostate and seminal vesicles easily may be reached by the finger and the septic contents removed. If necessary vasectomy and drainage may be carried out. Transillumination of the head may be made to determine the presence of sinusitis. The skilled specialist is necessary to remove these conditions by operation or treatment. The faucial tonsils should be enucleated. Ordinary tonsillectomy leaves an abundance of lymphoid tissue which may be sealed over by the operative scar and leaves a worse condition than that for which the operation was made. Adhesions between the tonsils and pillars of the fauces frequently wall in foci of infection in peritonsillar tissues. The supratonsillar fossa may contain lymphoid tissue and continue a source of focal infection even when the faucial tonsil is removed. Ulcerative gingivitis, small abscesses under the gums and collections of pus in the alveoli require vigorous treatment. Ill-fitted crowns on teeth and much bridge work may harbor septic infection in the mouth and produce systemic disease, and when found should be removed.

Careful examination of the tissues or secretions removed by manipulation or operations have been made microscopically; cultures of bacteria attempted and in the work we have done, animal experimentation has been carried out in many instances.

Illustrative conditions as found in patients suffering from chronic arthritis of a deforming type and subacute and chronic parenchymatous nephritis are included in this report. More than thirty cases so far have been under close observation whose original focal infection appeared to be in the tonsillar tissues. It is impossible to give all of the results in these patients at this time because a good many of the patients are still under observation. The result of the method of treatment in the majority of the patients has been most successful. In two patients of the advanced type of chronic deforming arthritis, no beneficial result was obtained. Following the report of the patients treated, the method of treatment will be further amplified.

CASE RECORDS

ARTHRITIS

CASE 1.—Mrs. A. F. R., aged 38 years. Multipara. Osteoarthritis of left hip. Disease had existed for six years with shortening of the extremity and pain, stiffness and lameness upon exertion with gradually increased severity. Four pregnancies with complicated deliveries; one miscarriage. Patient was well nourished and presented in addition to the disease of the left hip, hypertrophied

and infected faucial tonsils, ruptured perineum with a retro-displaced large uterus. Blood: hemoglobin 80 per cent., reds 4,350,000, whites 8,000. Twenty-four hour collection of urine 1525 c.c., 1.010 acid, no albumin, no sugar, no casts, no red cells, few leukocytes. *X*-ray of hip showed erosion of upper border of acetabulum with mushroom enlargement at juncture of head and neck of the femur, some flattening of the head. Treatment: Plastic pelvic operation and uterine curettage done by Prof. J. C. Webster. The tonsils were thoroughly enucleated by Dr. George E. Shambaugh. From the cut surface of the tonsils a nearly pure streptococcus was obtained in culture. A rabbit inoculated with resulting acute multiple arthritis. In a few days the animal died and from the infected joints and the heart's blood of the animal, pure cultures of the streptococcus were obtained. The patient was given a modified rest cure. Six months after leaving the hospital a letter from the patient stated that she was feeling well, could walk, play golf, ride horseback and perform any physical effort without discomfort. A slight limp due to shortening of the left extremity remained.

CASE 2.—Mrs. J. W. J., aged 40 years. IV-para. Osteoarthritis atrophica chronica. First seen January, 1907. For about eighteen months the patient has had swelling and stiffness and pain upon motion with some deformity of small joints of hands, feet, knees, wrists and elbows and more recently stiffness and lameness upon moving, in the cervical and dorsal spine. Previous condition of health good. During whole period of illness treatment for chronic arthritis in which salicylate of soda and other anti-rheumatic remedies were used. Recently a "streptolytic" serum was given by deep injection, as much as 100 c.c. per day for four days and then repeated upon the sixth. Reaction with temperature of 102 F. and general malaise followed each injection. Now the patient is weak, nervous, poor appetite and general stiffness upon exertion in the affected joints. Menstruation regular. Examination: Blood, hemoglobin 50 to 55 per cent.; reds, 4,100,000; whites, 12,500. Urine: twenty-four hour collection normal. Tonsils moderately enlarged, adherent to the pillars of the fauces and crypts moderately infected. General examination as to the organs of the body negative. Pelvic organs normal. Many of the joints of the fingers spindle-shaped, crepitate upon motion; both wrists enlarged and fluctuate. Swelling and tenderness of small joints of feet and more especially of the metatarsophalangeal; cervical spine, tenderness upon motion. Rest cure treatment and summer spent at Asheville, N. C., gave no relief. There was progressive development of the disease in all of the joints. On August 15, 1907, the tonsils were thoroughly enucleated by Dr. Otto T. Freer. A rest treatment was then instituted with restorative tonics. Treatment with syrup of iodid of iron immediately followed the tonsillectomy. All of the joints became considerably worse and there was redness, swelling and pain upon motion. The patient could walk only with great discomfort. In April, 1908, there was great improvement. The patient was able to walk two and one-half miles a day without fatigue or pain. There was still some deformity of the joints of fingers and some tenderness along the course of the right musculospiral nerve. Blood examination showed normal condition. In 1910 patient was re-examined and normal conditions found. The patient expressed herself as feeling entirely well. No cultures were made from this patient's tonsillar tissues.

CASE 3.—Mrs. E. W., aged 50 years. I-para. Osteoarthritis chronica, mixed type. Admitted to the Presbyterian Hospital Oct. 16, 1909. For two years there had been swelling, tenderness, pain upon motion and deformity of many of the joints of extremities. Began in feet and hands and extended to larger joints and finally involved cervical spine. The condition was progressive. There was malnutrition, loss of weight from 160 to 129 pounds. For years the patient had been subject to attacks of acute tonsillitis. She had also suffered for years from pyorrhea alveolaris.

Examination: Poorly nourished, very nervous and irritable. Mouth badly infected, many stumps of carious teeth some of them loose in the sockets, gums retracted and infected, tonsils large, rough, adherent to pillars of fauces and crypts infected. Breath offensive. Heart, lungs, abdominal organs and pelvic

organs normal. There was swelling with some deformity of both ankles, right metatarsophalangeal, both knees, right middle and left fingers, the wrists, and elbows. Some contraction of hamstring muscles prevented complete extension of legs. Both biceps tendons of arms contracted which prevented extension of forearm. Twenty-four hour collection of urine was normal in amount and specific gravity and contained a few hyalin casts. Blood: hemoglobin 90 per cent.; reds, 4,600,000; whites, 13,400. On Oct. 18, 1909, both faucial tonsils were enucleated by Dr. George E. Shambaugh and one week later the roots of carious teeth were thoroughly removed by Dr. Frederick Moorhead. From the cut surface of the tonsillar tissues a pure culture of streptococcus was obtained. A rabbit inoculated with a culture suffered from acute multiple arthritis and died in a few days. The streptococcus was regained from the infected joints and from the heart's blood. The patient was permitted to return to her home too soon and did not fully carry out directions as to rest treatment. Some time elapsed before the alveolar processes were absorbed and the mouth remained sore. On April 3, 1910, she returned to the hospital where rest treatment was instituted with resulting marked improvement. The patient gained in weight from 129 to 140 pounds. After the return home frequent communications by letter with the patient and her physician have shown that the progress of the disease has entirely stopped. Some of the deformities were so great that one could not expect entire anatomical restoration. The last communication is dated December, 1911, in which the patient says that the strength of her upper extremities and spine is entirely normal. There is some fatigue in the lower extremities after attempting to walk for any great distance, but there is a continued improvement even in this respect.

CASE 4.—J. H., male, married, aged 37 years. Bookkeeper. Osteoarthritis hypertrophica chronica. Admitted to the Presbyterian Hospital Dec. 9, 1909. There has been swelling, tenderness and soreness in the knees, ankles, left wrist and right jaw and right temporo-maxillary joints, during past four years. The first trouble began in the right knee following a fall. A diagnosis of tuberculous arthritis was made at that time and the knee joint was injected with iodoform emulsion on four different occasions. This gave no relief. After one year the left knee became involved and this was also aspirated. Then followed the involvement of other joints named. Recently he has had tonsillitis, but does not recall that he suffered from the disease since childhood. Denies venereal disease. Has four healthy children. Excepting for the arthritis is well.

Examination: Both tonsils greatly enlarged, rough and many follicles show cheesy masses. Unable fully to open the mouth. Both knees greatly enlarged, the right measuring 40, the left 39 cm. Motion limited. Small rice-like bodies can be felt in both joints. Both ankles are swollen, tender, slightly limited in motion. Spinal column is not involved. General examination did not show any abnormal find of importance. Blood: Hemoglobin 72 per cent. (Dare), reds 4,750,000, whites 9,500. Prostate not enlarged; no exudate obtained from stripping prostate. On Dec. 19, 1909, both tonsils thoroughly enucleated by Dr. F. Gurney Stubbs. Cultures from cut surfaces of tonsils yielded hemolytic streptococcus in pure culture. A rabbit inoculated with the streptococcus developed acute multiple arthritis and died in one week. A streptococcus was obtained in pure culture from the joint exudate. The heart-blood was sterile. Fluid from the right knee to the amount of two ounces was cloudy, yellow and sterile. Patient left the hospital on December 18 improved both as to joint condition and general health. A report recently from him stated that he had practically returned to normal condition.

CASE 5.—Dr. A. W. A., aged 40 years, married. Osteoarthritis hypertrophica chronica of spine. Was admitted to the Presbyterian Hospital March 20, 1911. Complained of stiffness and soreness with pain upon motion in hips and shoulders which began five years before as an attack of apparent lumbago. The condition gradually involved the whole back and during the last winter pain has extended to the left side of the neck and radiates around the chest making it difficult to

breathe. Stiffness and soreness increased after lying or sitting, aggravated by jars in walking or driving. Periods of improvement followed by worse conditions. Some time the joints of the fingers were involved during acute exacerbation of the spinal trouble. Does not remember that he ever suffered from severe tonsillitis. Has lost 30 pounds in last year. Had a gonorrhea of mild type fifteen years ago.

Examination: Tonsils small, adherent to pillars of fauces and some of the crypts can be seen infected. Heart and lungs normal. Abdomen negative excepting for rigidity of abdominal wall. Spinal column rigid. Tenderness to pressure along the spinous process. Some tenderness upon motion of both shoulders and hip joints but no crepitation. Prostate not enlarged, not tender and no exudate obtained by stripping the glands. On March 25, 1911, both tonsils were thoroughly enucleated by Dr. George E. Shambaugh. Tonsillar tissue small in amount, but small abscesses found deep in the tissues from which a pure culture of streptococcus was obtained. A rabbit inoculated intravenously developed acute arthritis which progressed into a chronic form of osteoarthritis. The animal lived nearly two months, became emaciated and at the time of death had several enlarged joints with exostosis and subluxation of the left shoulder. A streptococcus was isolated from the exudate in the joints. The patient has steadily improved, has played golf during the summer and has followed his professional duties. A letter dated December 18, 1911, states "my general condition is extremely good. I have added 30 pounds to my weight and have lost the sense of fatigue from which I suffered. I can move much more rapidly and comfortably and rest well at night. I still suffer from periods of decline, but these are very short in duration. My spine has improved wonderfully, I can stand almost straight and the pain is almost gone. There is still some limitation in motion especially in the neck, but there is steady improvement.

CASE 6.—Dr. E. S. E., aged 26 years, single. Polyarthritis, subacute. Admitted to the Presbyterian Hospital March 2, 1911. Pain in both knees, left ankle, small joints of both feet especially of the metatarsophalangeal and some soreness in lumbar spine. Tonsillitis began ten years ago and after that time an exacerbation of an arthritis of feet and knees was exaggerated. Was obliged to go to bed. Had an attack of tonsillitis with arthritis six years ago. There was swelling and tenderness of joints named. The tonsils are large, rough, crypts infected with whitish exudate. Lungs and heart normal. Abdominal organs normal. After two weeks of treatment the patient was discharged as subjectively well. Later patient developed chronic arthritis involving small joints of feet, ankles, knees and wrists. January, 1911, had acute appendicitis which was operated upon. Before the patient left the hospital his tonsils were enucleated by Dr. Friedberg. A pure streptococcus was obtained in culture and inoculated into a rabbit. Acute multiple arthritis developed and the rabbit continued ill for a considerable period and then recovered. Following the enucleation of the tonsils the patient passed two weeks in the country at rest. Improvement was steady and progressive and by the middle of September he was entirely free from all joint involvements and able to return to his professional work.

CASE 7.—Mrs. C. C. M., aged 30 years, I-para. Osteoarthritis atrophica chronica. Admitted to the Presbyterian Hospital May 17, 1911. Patient complained of soreness, stiffness and swelling and some redness in the small joints of feet and hands, knees, shoulders and wrists. The joint trouble appeared first in September, 1910, and continued until February, 1911, when there was a rather sharp exacerbation. She is always worse in the morning. There has been no fever. She is nervous, has a good deal of occipital headache and pain in the back. Appetite and digestion are good. Bowels moderately constipated. Average weight 108 pounds. No disturbance of the urinary organs. Menstruation regular, lasts four days, but is painful. Had a miscarriage three and a half years ago. Had frequent sore throat since an attack of scarlet fever when she was a child. Pain in left side few years ago, which was called "pleurisy."

Examination: Patient frail and sallow; tonsils enlarged, rough, adherent to pillars and yellowish exudate could be seen in crypts. Lungs and heart normal.

Abdominal organs appear normal. Pelvic examination shows no abnormal condition. Urine, twenty-four hour collection normal. Blood: hemoglobin 75 per cent., reds 4,600,000, whites 6,000. On March 23, 1911, tonsils thoroughly enucleated by Dr. George E. Shambaugh. A pure streptococcus was obtained in culture from the cut surfaces. This inoculated into a rabbit produced an acute multiple arthritis. Animal died and the culture of streptococcus was obtained from the exudate of the joints. Twenty-four hours after the enucleation of the tonsils, patient left the hospital without my knowledge. She kept up and about and suffered more with joint pain than for a long time. She was then put to bed upon a rest cure treatment and immediate improvement occurred. On Sept. 25, 1911, patient reported herself as improved in every way. Joint trouble practically gone. She still complains of lessened strength and endurance.

CASE 8.—Miss M. I. P., aged 39 years, nurse. Arthritis atrophica chronica. Seen first Dec. 7, 1910. Patient complained of swelling and stiffness in both knees which began a year and a half ago. Constantly present, but periodically worse. No pain when quiet. Aggravated by motion and tire. Left index finger became involved in 1910 and later the right elbow. Tonsillitis off and on for four years. Has noticed an increase of joint disturbance with tonsillitis. General condition good. Bowels regular. Menstruation normal.

Examination: Well nourished. Teeth good. Mouth clean. Tonsils enlarged, rough, both infected, right more than left. Heart and lungs normal. Abdominal organs negative. Blood: hemoglobin 85 per cent., reds 4,600,000, whites 9,000. Urine: twenty-four hour collection showed normal condition. Both knee joints swollen, crepitate on motion and are tender. No exudate. Right elbow swollen and tender. Left index finger spindle-form. Tonsils enucleated by Dr. George E. Shambaugh. Cultures made from cut surfaces of tonsils gave a streptococcus in almost pure culture. Streptococcus injected into rabbit produced acute multiple arthritis. The animal died and from the exudate of the joints and the heart's blood a pure culture of the streptococcus was obtained. On June 27, 1910, patient wrote that she had taken a rest cure for ten days and had resumed her work in a graduated way. Had been slight but gradual improvement until about middle of May, then she rapidly improved and considered herself entirely well.

CASE 9.—Mr. I. M., aged 27 years, single. Traveling salesman. Osteoarthritis hypertrophica chronica. Admitted to the Presbyterian Hospital May 25, 1911. Complained of limitation of motion and pain in right elbow, both knees, left sternoclavicular and left temporo-maxillary. Trouble began three years ago. Onset insidious. Began in knees with swelling, pain on motion. Two months later toes, fingers, elbows, shoulders and jaw became involved. Was treated at hospital in Pittsfield, Mass., and cast put on one knee. This gave temporary relief. Since that time the course has been one of exacerbation and decline, but he has never been free from some debility. Had scarlet fever with double otitis media when a child. Denies venereal disease. Does not remember to have suffered from tonsillitis.

Examination: Right forearm cannot be fully extended because of contraction of biceps muscle. Elbow joint not involved. Left knee joint is swollen with effusion into synovial sac. Soft structures about joint boggy and thickened. Hamstring muscles contracted. Right knee joint shows abnormally free motion. There is exostosis on external surfaces of outer condyle. Left sternoclavicular articulation is moderately swollen, tender and painful on motion and mouth cannot be fully opened. Other joints are normal. Lungs and heart normal. Mouth clean. Teeth sound. Tonsils are not enlarged, but are ragged and are buried between adherent pillars and show point of exudate in follicles. Abdominal organs normal. Prostate is not enlarged and no exudate can be obtained upon stripping the organ. The urine in single and twenty-four hour collection is normal. Blood: hemoglobin 76 per cent. (Dare), reds 4,100,000, whites 8,400. The tonsils were thoroughly enucleated by Dr. George E. Shambaugh; 30 c.c. of a clear fluid was obtained from the left knee joint. This was sterile and microscopically only a few polynuclear leukocytes were shown. A streptococcus

in pure culture was obtained from the cut surfaces of the tonsils. A rabbit inoculated developed acute multiple arthritis and died in a few days. A pure culture of streptococcus was obtained from exudate of joints. Autogenous vaccines were made and used upon this patient every week or ten days. On June 25 he showed marked improvement and in September returned to his usual occupation which he followed without much discomfort. On December 22 the patient wrote that his condition was much improved and that there was practically no pain in the joints and very little if any stiffness. Slight swelling still remains in the left knee. He had had three vaccinations and to the vaccinations he ascribed much of his improvement.

CASE 10.—W. J. F., aged 30 years, married, brewer. Arthritis rheumatica chronica. Patient admitted to the Presbyterian Hospital Sept. 11, 1911. He has suffered from attacks of rheumatism beginning when he was 7 years of age with frequent attacks during the last twenty-one years. Finally chronic arthritis resulted. There was a decided rheumatic family history. Had gonorrhea fifteen years ago from which he made a good recovery. On admission to the Presbyterian Hospital he presents swollen, painful right ankle, right index and second fingers and right elbow. Tonsils are enlarged, rough and infected. The left border of the heart measures 12 cm. from the midsternum. A soft systolic murmur heard in right second interspace, not transmitted. Urine examination normal, including specimen and twenty-four hour collections. Blood: examination normal find. Prostate not enlarged and exudate could be stripped from the gland. On September 26 the tonsils were thoroughly enucleated by Dr. George E. Shambaugh. From the cut surfaces of the tonsils almost pure cultures of the streptococcus were obtained. This inoculated into a rabbit produced acute multiple arthritis from which the animal died in a few days. The streptococcus was re-obtained from the joint exudate and heart's blood. Phenomenal improvement followed the enucleation of the tonsils. The first two or three days the joints were more swollen and painful. Then immediately began improvement and for the first time in many years the patient is now entirely free of arthritis.

These case histories are good examples of arthritis deformans and include but a few of the many who have been so managed, but are sufficient in number to illustrate the principles of the paper.

SUBACUTE AND CHRONIC PARENCHYMATOUS NEPHRITIS

CASE 1.—Miss L. R., aged 22 years, Chicago. Was admitted to the Presbyterian Hospital Sept. 11, 1909. Two months ago had an attack of acute tonsillitis with broncho-pneumonia. Following this developed edema of face and hands, a pasty pallor, headache and nausea, and it was found that the urine contained albumin and a good many hyaline, granular and epithelial casts.

Examination showed marked pallor, edema of face, lower extremities with some free fluid in the abdominal cavity. Heart and lungs negative. Liver not enlarged. Spleen not palpable. Blood: 4,000,000 reds, 18,700 whites, 63 per cent. hemoglobin (Dare). Urine: twenty-four hour collection 900 c.c., 1.020, much albumin, many hyaline and granular casts, much blood. Arterial tension (Stanton) 145 mm. systolic. Tonsils very large, rough, infected with adhesions to the pillars of the fauces. The patient was kept under treatment at the Presbyterian Hospital from September 11 to November 13, upon a suitable diet, free bowel actions every day and an iron alkaline treatment with gradual improvement in general condition with a better urine output, less general dropsy with an improvement in the blood condition, but on the whole the patient did not advance much toward recovery. Therefore, on Jan. 5, 1910, she was again placed in the Presbyterian Hospital and the tonsils were thoroughly enucleated by Dr. F. Gurney Stubbs. The patient made an uneventful recovery from the tonsillectomy. The patient was kept quiet upon a suitable diet, restorative tonics, etc. On January 19 the twenty-four hour collection of urine was 1470 c.c., specific gravity 1.015, albumin .08 per cent. Three fine granular casts were found in the centrifuged specimen, no blood, no

leukocytes. Before this date the albumin was larger in quantity. There were always many casts and a good many red cells and leukocytes. From this date on the urine slowly cleared up. The general condition of the patient improved until the winter of 1910 and 1911. When in the south (San Antonio, Texas) acquired bronchopneumonia and was severely ill for a time. Nevertheless recovery from this condition followed with a continued improvement of the kidney and general condition. On June 24, 1911, a morning specimen of urine showed no serum albumin, no casts, no blood, no leukocytes. An evening specimen, 1.024, showed no albumin, no casts, no blood. The blood at this time showed hemoglobin 90 per cent., reds 5,400,000, whites 8,000. General hygiene was continued and at the present time the patient is practically well. Oct. 17, 1911, there were 1400 c.c. of urine, specific gravity 1.012, no albumin, and the sediment from a fresh specimen examined at the same time showed no leukocytes, no blood cells, no casts.

CASE 2.—John H., schoolboy, aged 13 years. Was admitted to the Presbyterian Hospital from the Central Free Dispensary on Dec. 4, 1909, suffering from subacute parenchymatous nephritis of the hemorrhagic type. Was operated upon for hernia at the Presbyterian Hospital in September, 1909, and left the hospital well. Suffered from tonsillitis three weeks ago for which no treatment was given. One week ago vomited in the morning after breakfast, again at dinner and supper time. Frequent urination occurred at the same time and it was noticed that the urine was red in color. Became thirsty, with weakness, dizziness and two days ago vomited up some bright blood. Since then has been in bed. Had scarlet fever two years ago. No other disease excepting hernia which was operated on as mentioned. Has had severe attacks of acute tonsillitis.

Examination: Illy nourished boy, marked pallor, edema of eyes, face and some of the lower extremities. Heart and lungs negative. Abdomen negative. Blood pressure in recumbent posture 135 to 145 mm.; systolic. Tonsils large, rough and infected. Temperature slightly elevated but subfebrile. Pulse and temperature practically normal. Blood: reds 3,250,000, whites 9,400, hemoglobin 50 per cent. (Dare).

Urine: Twenty-four hour collection 1200 c.c. 1.008, cloudy, red, with blood, acid reaction. .1 per cent. albumin by weight. Many twenty-four hour collections of urine were made with practically same results. Tonsillectomy was advised and enucleation of tonsils was done by Dr. F. Gurney Stubbs on January 17. Boy made an uneventful recovery from the operation. Was kept quiet in bed upon a suitable non-nitrogenous, non-salt diet. Bowels free and as soon as the hemorrhage in the urine ceased, was given restorative iron tonics. The blood improved gradually. On January 10, a little more than a month after admission, the reds were 4,500,000, the hemoglobin about 70 per cent. Urine, the same date 1500 c.c., specific gravity 1.010, acid, albumin present in small quantities, no blood, no casts, a few leukocytes. Subsequent examination of the boy during the summer of 1910, showed restoration to the normal.

CASE 3.—Dr. R. N. S., aged 26 years, Chicago. Was first seen on Dec. 13, 1909, and was admitted to the Presbyterian Hospital on Dec. 15, 1909. Patient came because albumin had been detected in the urine in October, 1909. As high as 2 per cent. by measurement had been found. A few hyaline and finely granular casts had also been detected. Patient tires easily, has some dull headache and is worried much about kidney condition. Has suffered from attacks of tonsillitis for years past. Had one attack during last winter. Has smoked to excess until recent time.

Examination: Tonsils large, red, ragged, infected. Otherwise throat and mouth normal. Chest, heart and lungs negative. Abdomen negative. No edema of lower extremities.

Urine: Specimen shows specific gravity 1.024, a good deal of albumin, not measured, many hyaline and granular casts, no blood. The arterial tension with the Stanton instrument was 95 mm. systolic. Blood: hemoglobin 85 to 90 per cent., reds 4,500,000, whites 8,600. On Dec. 16, 1909, the tonsils were thoroughly enucleated by Dr. Rhodes. Since that time the patient has been examined and

the urine is found entirely clear, and the patient remained in good health. A letter from the patient dated Dec. 20, 1911, states that the urine is free of albumin and casts. "Am feeling well and have had no evidence of nephritis for the last year and a half."

CASE 4.—Roy Y., aged 18 years, schoolboy. Was first examined on May 13, 1910. A year and a half preceding this time a physician had found albumin and many leukocytes in the urine. There had been no headache, no edema and the patient thinks no fever. He had suffered from scarlet fever, pneumonia twice, the last time one year before and had had many attacks of tonsillitis.

Examination showed well developed, nourished boy of fairly good color. The lymph-nodes in posterior triangles of neck moderately enlarged. Tonsils enormously enlarged, red, ragged, and crypts filled with yellowish exudate. Heart and lungs both normal. Abdomen negative. No edema of face or legs. A specimen of urine, 1.012, albumin in rather large amount and the microscope showed hyaline and granular casts, and a few kidney epithelia and leukocytes. The arterial tension 130, systolic. The important relation of the kidney to the infection of the tonsils was explained to the parents and the attending physician, Dr. W. S. Picotte, of Ishpeming, Mich., and thorough enucleation of the tonsils advised. This was done, but I fear inadequately, during the summer of 1910. He spent the next winter in Florida in school and reported that his general condition had been much improved. On Sept. 12, 1911, he came for examination. The bases of both tonsils still remained and were red, somewhat infected, the general condition good, the urine acid, a faint trace of serum albumin, but no casts and no leukocytes. Arterial tension 125. The condition was explained as improved and regret expressed that the tonsils had not been really enucleated. Was advised to have urine re-examined from time to time and if albuminuria continued to have remaining portions of tonsils dissected out.

CASE 5.—Miss S. T., aged 20 years. Was first examined through the courtesy of her physician, Dr. Albert Smith of Parsons, Kansas, on July 6, 1911. The complaint was extreme weakness, swelling of the lower extremities and abdomen and anemia. The history showed that in November, 1910, the patient had a cold with infection of the throat. About a month later patient became very tired at a dance and it was noticed that the feet became swollen. Albumin and casts with blood were found in the urine. The patient was taken to some mineral springs in Texas and drank quantities of water. Rapid edema of face, extremities and body resulted. Has had no headache, no fever and no disturbance of vision. Slight cough recently. Had scarlet fever at 7 years of age.

Examination: A tall slim girl, very pale, marked edema of face, lower extremities, free fluid in peritoneal and a moderate amount in both pleural cavities. Few lymph-nodes palpable in posterior triangles of neck. Apex of heart 8 cm. from midsternum. A blowing murmur over the pulmonary area. Arterial tension 140 mm. systolic, pulse 78 per minute, temperature normal. Blood: hemoglobin 53 per cent. (Dare).

Urine: Specific gravity 1.012, much albumin, many hyaline and granular casts and many red cells and leukocytes. A good many kidney epithelia. The patient placed in Presbyterian Hospital upon an appropriate salt free diet. At the hospital the urine measured in twenty-four hours from 600 to 650 c.c. on different days. Specific gravity 1.018 to 1.020, contained a great deal of albumin, many hyaline and granular casts, many leukocytes and kidney epithelia and a good deal of blood. The tonsils were enucleated by Dr. Friedberg and the weakness of the condition of the patient necessitated two operations with an interval of one week between. The dropsical condition gradually diminished and the patient improved in general condition. On July 21 there were 1,620 c.c. of urine, specific gravity 1.010 with less albumin, fewer casts and no blood. On July 29 the total urine was 1,620 c.c., specific gravity 1.010, little serum albumin, few hyaline and granular casts, few red cells and few leukocytes and kidney epithelia. At this date the patient left the hospital and spent the remainder of the summer in Canada following out a rest treatment with non-nitrogenous diet salt free and a restorative tonic of the syrup of the iodid of iron, free bowel actions daily. On

Sept. 29, 1911, a re-examination showed a much improved condition. There was but a trace of albumin in the urine, very few hyaline casts, the dropsy had entirely disappeared excepting that when the patient was up and about for the greater part of the day, there was a slight swelling about the ankles. The red cells were 4,800,000, hemoglobin 65 to 70 per cent., whites 10,000. A letter recently from the patient's mother shows still further improved condition. On Dec. 23, 1911, urine was examined, showed specific gravity 1.015, yellowish-brown color, small amount of serum albumin and centrifuged deposit showed few leukocytes and two hyalo-granular casts. On Jan. 4, 1912, a letter from her physician, Dr. Albert Smith, states that the physical examination showed a slight edema above each ankle. Patient looks well. Has gained in weight and strength. Blood count at that date showed 4,252,000 reds, 8,200 whites, 80 per cent. hemoglobin, and a letter from the mother of even date states that the patient is feeling fine, does not seem to have any aches or pains and is gaining in flesh and strength.

CASE 6.—Mr. C. L., aged 23 years. Foreman in wholesale tailoring establishment, Chicago. Examined on May 6, 1911. Came for examination because albumin and blood had been found in urine. Is easily exhausted after exertion and also early in the morning. Appetite is not disturbed. Sleeps well as a rule. Bowels move regularly. Has had varicose veins of legs for a long time. Has suffered from acute tonsillitis on several occasions during the last few winters. Had typhoid at 12 years of age. No other serious illness.

Examination: Moderate pallor of skin, no enlargement of lymph glands. Tonsils both very large and infected. Heart, apex 9 cm. from midsternum, left border 11 cm. No irregularity. First sound moderately rough and impure. No accentuation of second sounds. Lungs normal. Abdominal organs negative. No edema of lower extremities. Urine: Great deal of albumin, good many casts, red cells, leukocytes and kidney epithelia. Blood: hemoglobin 70 per cent., reds 4,000,000, whites 8,000. Arterial tension 110 mm., systolic. Condition of kidneys and probable relation to local infection of tonsils explained to patient. Advised to have the tonsils thoroughly enucleated. On Nov. 4, 1911, the patient was seen by request. He had had the tonsils thoroughly enucleated by his own physician and had had a month's vacation which he spent in the country upon simple nonnitrogenous food and had kept the bowels moving freely every day. At this time the urine, a specimen, contained no albumin, no casts, no red cells and only a few white cells. The patient expressed himself as feeling entirely well. On Nov. 4, 1911, a specimen of urine was examined, showed no serum albumin, no casts, a few leukocytes, no reds.

Reports of other cases are not made at this time because it would make an article of this kind too long, but subsequent reports will be made on other patients.

THE EFFECT OF THE INOCULATION OF ANIMALS WITH THE CULTURES OBTAINED FROM INFECTED TISSUES

It is noteworthy that the streptococcus obtained in almost pure culture from many of the patients when inoculated into animals, produced an acute arthritis either single or multiple, and in many of the animals produced an arthritis of deforming type. Furthermore, from the dead animals' tissues the streptococcus has been again obtained in cultures. It is also true that the cultures from the tonsils of patients who had no evidence of systemic infection, contained the streptococcus practically identical with those patients who had systemic diseases. Inoculation of the strains of the streptococci obtained from the tonsils of individuals, without systemic disease, has not yet been experimented with enough to

know what the result on animals would be. It is an experimental fact that the streptococcus of any source may produce acute joint lesions in inoculated animals, especially rabbits. In most of the animals inoculated with the strain of streptococcus obtained from our patients, the usual acute arthritis occurred. In some of the animals the joint process became chronic and developed the marked anatomic changes (exostoses, rice bodies, atrophy of cartilage, subluxation, etc.), found in osteo-arthritis of man. It is also notable that in three of the patients suffering from nephritis, the strain of the streptococcus obtained from the tonsillar tissues of these patients produced albuminuria in the inoculated animals. No other strains produced albuminuria.

A few of the patients have been treated with autogenous vaccines. The vaccines invariably produced reactions when injected in the dose of from ten to five hundred millions. This reaction consisted of marked tenderness, redness and swelling and frequently of rise of temperature of varying degree with constitutional disturbance in the form of general discomfort, aching muscles, headache, etc. Leukocytosis of varying degree would sometimes follow the injections. Tenderness in joints would also sometimes occur with the vaccinations. So far it cannot be said that the autogenous vaccinations have been of any special value in a group of patients. Individual patients have apparently shown greater improvement with the vaccinations than without them.

General hygienic treatment has been necessary in all the classes of patients treated and one would naturally infer that this general treatment had a good deal to do with the result. With the arthritis cases it has been found just as necessary to continue a long and yet variable rest treatment with good food, restorative tonics and the various forms of individual treatment usually employed in the management of this group of diseases. Assistance has been rendered by Dr. John Ridlon, Dr. Charles A. Parker, Dr. E. W. Ryerson and others in the arthritis cases, by such measures as were found necessary in individual patients. Casts have been applied to extremities, or to the spine, contracted tendons have been stretched and other necessary manipulations and corrective measures used.

In those patients who, for some reason, could not or would not follow out the details of after-treatment, rest, etc., improvement was not as soon obtained or not as fully secured as in those patients under command. This, however, does not mean in my opinion that the final results are due to the after-treatment alone, for in past years the same care in the general treatment did not give the same degree of good results that has been obtained in later years by the methods suggested in this paper.

Further Experimentation Necessary.—It naturally occurs to one that there must be some other element present in individuals lacking in some patients which permits the systemic disease to attack them while others escape who present practically the same local condition with chronic focal infection. Many people suffer from chronic hypertrophic tonsillitis with chronic infection, or an excess of lymphoid tissue in the nasopharynx with consequent anatomic obstruction and lack of drainage, or have chronic sinusitis, or chronic focal disease in other portions of the body and yet

appear to be entirely well. Naturally the question suggests itself that there must be some protective agency present in certain people and lacking in others. It is a well-known fact that traumatism, excessive fatigue, general debility from some previous exhausting disease or exposure may be the beginning of an arthritis. We commonly speak of this as a less resisting power in the individual. Can we by some means ascertain what the essential lacking element may be in the individual whose joints are attacked from an existing focal infection? The specificity of the bacteria obtained from cultures from focal infections could probably be proved by investigation of the reaction to blood-serum, the spinal fluid and the exudate in the joints or elsewhere of patients suffering with systemic disease, and some light could probably be thrown on the question by the research into the question of bacterial reaction to the blood, spinal fluid, urine, etc., of patients who have focal infection without systemic disease. A further study would be of value also of the opsonic index and other specific reaction of the blood, spinal fluid, joint fluid, etc., of individuals before and after autogenous vaccinations or after inoculations of polyvalent horse serum made by injection into the horse of several strains of streptococci obtained from patients. Research of this kind is under way in the work which is now being done, and it is to be hoped that a later report may explain some of the conditions which are now obscure.

I think there can be no doubt that the insidious, slow, degenerative processes which occur in many patients who arrive at the meridian of life are due to slow intoxications from chronic focal infections variously located. The medical literature is full of statements of auto-intoxications from the intestinal tract and it is not improbable that this may be a source. It is a fact that with proper hygienic management in diet, exercise, free excretion through bowel, kidney, skin, etc., retrograde changes are delayed and an individual's health much improved thereby, but it is also true that with these measures fully carried out many people still show progressive interstitial nephritis with cardiovascular changes in spite of the best hygienic management. Not infrequently it has been my experience to find that such patients suffer from a chronic infection of the gall-bladder, appendix or prostate, or some other focal infection. The result of the removal of these infections has also been most astounding in many instances. This paper would be too long to discuss further that part of the result of focal infections. I hope to present that phase of the subject in another paper in the near future.

The Necessity for the Removal of Focal Infective Processes.—It is not the purpose of this paper to advocate unnecessary surgical procedure. It is, however, necessary to do something radical when one finds a patient who suffers from a focal disease that may produce acute disease or chronic degenerative changes in any of the organs of the body. Excessive amounts of lymphoid tissue of the faucial tonsils or nasopharynx in children is a double menace. With obstruction and want of drainage, those localities produce not only alterations in the bony framework of face and chest, but offer a source of systemic infection which may be ruinous to the individual. There can be no other reason for the prevalence of rheumatic

fever in children than the frequency of local infections in throat and nose. Quite as frequently children have endocarditis without other symptoms or rheumatic infection which has its source in the throat. There may possibly be a reason for the retention of some of the lymphoid tissue in the faucial tonsil, but so far, the physiologists have not been able to give a reason for its retention. Nor, I think, has there ever been an argument advanced to show harm from the practical enucleation of all of this tissue. I think any one who has noted the difference in the physical and mental makeup of a child before and after the removal of large amounts of lymphoid tissue in the throat, must be convinced that the change is due not only to a better air space, but also probably to the removal of a constant, even though it may be slight, systemic infection. It is an interesting observation of Dr. Thomas L. Gilmer and of others, of foci of specific infection about the gums and the presence of abscesses about the roots of the teeth, often unsuspected, which must be recognized as a source of systemic infection that has not received the attention from the medical profession which it deserves. I think anyone who has seen the illuminating results of a better physical health in patients whose dirty mouths have been made as nearly as possible clean, must be convinced of this source of systemic infection.

I think the specialist, as well as the general practitioner, has not fully recognized the importance of the relation of the focal infection to systemic disease, and has not been fully awake to the necessity for entire eradication of the focus. Partial removal of the faucial tonsils by whatever means, frequently leaves a condition as bad or worse than the original one. An infected tonsil or tonsillar tissue need not be large in bulk. In some of our patients small and apparently innocent tonsils contained abscesses from which pure cultures of streptococci were obtained. The scar of operation may seal over infected crypts in lymphoid tissue. An incomplete operation on the mouth may still leave alveolar abscesses. In several instances of patients included in this series, more than one operation on the tonsils has been made necessary because of incomplete removal of the focus of infection by the first operator.

The purpose of this paper has been to call the attention of the profession to a source of general disease which, while recognized by a few, is entirely ignored by the many. No one would have the effrontery to say that the lack of recognition of the focus of infection is absolutely detrimental to the best interest of the patient, nor would one say that the treatment advocated is specific in that all patients are made whole and well by it, but it is believed that the basic principle involved as a cause of systemic disease which should be recognized, should be sought for more frequently and when the focal infection, wheresoever it may be located, seems to be related to the systemic disease, radical measures should be instituted to remove it. When this is done those general measures which long have been recognized as essential to the well being of an individual should be instituted so that nothing will be left undone which may restore an invalid to health. So far the experimental work done seems to prove clinically the truth of the principle advocated.

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CHRONIC ORAL INFECTIONS *

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In 1891, Miller, in the preface to a series of articles published in the *Dental Cosmos*, Philadelphia, entitled "The Human Mouth as a Focus of Infection," says: "During the last few years the conviction has grown continually stronger among physicians, as well as dentists, that the human mouth as a gathering place and incubator of pathogenic germs performs a significant rôle in the production of varied disorders of the body, and that if many diseases whose origin is enveloped in mystery could be traced to their source, they would be found to have originated in the oral cavity."[1]

Miller isolated fifty-eight varieties of microorganisms from the mouth, many of which are pathogenic, or may under favorable circumstances become such.[2] These findings were verified by Black, Vincentini and others.[3]

When it is realized that in some or all mouths there may be found at times the bacteria of most infections, the importance of the study of the mouth as a focal cause of disease becomes apparent. For instance, tubercle bacilli are found in the mouths of non-tubercular patients. When the cervical glands are found to be tubercular there can be little doubt but the bacilli often reach the glands from the mouth through alveolar abscess, or through the tonsils or through some suppurating focus in the mouth.

The prevalence of tubercle bacilli in the mouths of those not tubercular is indicated by the experiments of Gilberti.[4] He injected guinea-pigs, previously subjected to the tuberculin test, with mixtures of inguinal, also of cervical glands taken from children dead of non-tubercular disease, so far as was known. Of thirty animals injected with the cervical gland mixture, eleven died from tuberculosis. Of those injected with the inguinal gland mixture, only two died of tuberculosis.

As a result of food wedging in between teeth malposed, or between approximating teeth having cavities of decay, or between teeth with improper restored contours, the gum septum is destroyed and deep pockets are formed. The injudicious use of crowns and bridges made as substitutes for lost teeth and their faulty adjustment are sources of great danger, since they form pockets which harbor bacteria and are irritants to the gums, peridental membrane and alveolar process. These pockets constantly present granulating walls and afford good incubating centers for pathogenic and other microorganisms, both aerobic and anaerobic. Unfilled cavities of decay in teeth always harbor both saprophytic and pathogenic microorganisms; also unsterilized pulpless root canals, or root canals containing gangrenous pulps or their septic remains, may be equally prolific as incubating centers.

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* Read before the Chicago Medical Society, Nov. 15, 1911.

1. Dental Cosmos, September, 1891, p. 689.
2. Pathogenic Bacteria, McFarland, 4th Ed.
3. Bacteria of the Sputa and Cryptogenic Flora of the Mouth, London, 1897.
4. Medical Practice Series, 1910, iii, 313.

Many persons are mouth-breathers, either occasionally or generally, due to stenosis from malformation or disease of the nasal fossæ. The nasal fossæ offer barriers to the passage of bacteria through their labyrinthine formation, the hairs and the agglutinating material found on their walls. The mouth offers practically no such obstructions. Those having nasal stenosis breathe largely through the mouth; as a result, there is admitted to the oral cavity, pharynx and tonsils greater numbers of bacteria than when the nose performs its function normally. There may be other causes for lesions of the tonsils, but it is highly probable that the constant passing of bacteria over them from a diseased mouth is the most potent. That bacteria may pass through healthy tonsils without causing them to become diseased has been demonstrated by Wood.[5] Some, however, find convenient lodging-places in the crypts of the tonsils, where they remain until they become active and produce local or general infection.

Cervical and submaxillary adenitis is especially common in children having diseased teeth and jaws. Frequently the glands are removed and their unsuspected cause, alveolar abscess, left untouched. Odenthal found glandular swellings in 99 per cent. of all children who suffered from badly decayed teeth (abscessed teeth), and only 49 per cent. in those having sound teeth.[6]

Chronic alveolar abscess is so common that few go through life without one or more such suppurations. There are two forms of this disease; that which continually or periodically discharges either into the mouth, nose, maxillary sinus or elsewhere and the blind abscess, which never discharges through a sinus, the pus being absorbed by the granulating walls of the abscess. The former, discharging pus and bacteria as indicated, cannot but be prejudicial to health, and the latter, the blind abscess, offers greater danger. Its presence is generally unobserved by the patient and may be overlooked by the physician, even if the mouth is examined, since it may not present to the eye any clinical evidence of its presence. I think 25 per cent. a safe estimate of the percentage of jaws having suppurating cavities. That greater havoc is not wrought by such foci of infection is due, either to the fact that the virulence of the bacteria and their poisons is insufficient, or to the fact that the individual becomes immune. However, instances are not lacking which demonstrate that such foci of infection are instrumental in causing neuritis, neuroses and secondary infections of the eye, ear and other parts; therefore, when there are manifestations of disease which may be dependent on some local focus of infection, the mouth and jaws, as well as other possible sources, should be examined to discover if they may not hold the key to the solution of the problem.

The question which has not been, but must and will be answered, is, What is the bacteriology of chronic alveolar abscess? When this question and the question of susceptibility and immunity is answered, we can better understand the relation which these pathologic cavities in the maxillæ

5. Jour. Am. Med. Assn., Sept. 9, 1911.
6. Therap. des mal. infect., p. 256.

bear to lesions in the heart, kidneys, lungs, joints, nerves and brain. Here are possibilities not to be ignored. Alveolar abscess is usually considered inconsequential, and when the attention of the profession has been called to it, it has generally excited little interest and been allowed to pass as an insignificant "gum boil." Did similar abscesses exist in other bones of the body, their presence would demand attention, both by the patient and by the physician.

Acute alveolar abscess usually manifests itself in pain, swelling, rigors and fever, but the chronic form often gives no evidence of its presence. Following the subsidence of the acute attack the patient will often be unaware of the continuation of the condition, but unless the tooth causing it is removed, or has its pulp canal or canals disinfected and filled, the chronic form ensues and continues indefinitely, as it is rare that spontaneous cures takes place. Owing to the tortuous shapes of some root canals, it is not possible in all cases to completely sterilize and fill them to their ends, and even if the roots are rendered sterile through canal disinfection, the chronic condition is not always cured. A part of the apical portion of the root in such abscesses is often denuded of its peridental membrane by suppuration. This portion of the root divested of the soft tissue attachment forms a pocket between itself and the adjacent granulation tissue which is a breeding-place for microorganisms which induce continuous reinfection.

The salivary glands are doubtless occasionally infected by bacteria from the mouth. I have seen two cases of infection of the parotid gland which seemed to be traceable to an infected mouth, and several cases of infection of the submaxillary gland which could be traced to no other source.

It is but natural and proper that patients suffering from endocarditis, renal, joint and other lesions, outside the mouth, should consult the internist, orthopedist or neurologist. On this account the oral specialist has little opportunity to tabulate cases which give any great light as to the constitutional relation existing between the disorders before mentioned and chronic infections in the mouth. I have frequently found marked improvement in the health of patients, following the cure of diseased condition in the mouth, but the treatment has not usually been instituted with other idea than the removal of local lesions. To illustrate:

Some years ago, a man, a little beyond middle life, consulted me relative to a trivial dental lesion. On making a careful examination of the entire oral cavity, I found several small sinuses discharging pus above the bicuspid teeth on one side of the upper jaw. On exploring these openings with a sharp steel probe, a large cavity was discovered in the bone, the result of alveolar abscess, the presence of which was unsuspected by the patient. On inquiring into his physical condition, I learned that for the past year he had had a cough, his digestion was impaired, and much of the time his temperature was slightly above normal. He had frequently consulted his family physician, who examined his heart, lungs, sputum, urine and blood. These gave no clue to the cause of his ill health. His appearance indicated a toxemia. I removed several teeth, curetted the abscess in the jaw and followed it by suitable after-treatment. His fever at once subsided, his digestion was soon much improved, his cough was lessened and finally

disappeared altogether. Although seemingly his physician had made a careful examination, he had overlooked one important factor, the mouth.

Mrs. C., aged 30 years, noticed the appearance and disappearance at frequent intervals of an erythemic patch about the size of a silver quarter on the skin over the left canine fossa. On examining the mouth for a possible cause for this reddened condition of the skin, I found the left lateral incisor pulpless. There was no sinus; the tooth had given no trouble. The only evidence of disease found in the mouth was a slight hyperemia of the gum over the lateral incisor root indicated. The radiograph showed a pus cavity in the bone at the end of the root about the size of a large pea. Disinfection of the root did not effect a cure. I made an opening through the labial wall of the alveolar process, excised the end of the root and curetted the cavity. The erythemic patch on the cheek disappeared and did not return.

Mr. S., aged about 25 years, was directed to my clinic for the treatment of a chronic abscess in the upper jaw in the vicinity of the incisors and cuspid which had proven intractable to ordinary treatment. His physical condition was much impaired, he was emaciated, his skin was sallow, his cheeks hollow, his conjunctivæ pale, eyes dull, and his lips lacked the color of health. His temperature was slightly above normal. I could elicit no history of any other illness, recent or otherwise. His appearance gave the picture of a toxemia. In this case likewise the sharp steel probe revealed a large cavity in the bone, extending from the central incisor to the first molar. Oct. 20, 1911, I extracted the cuspid tooth and curetted the bone cavity. October 27 he returned to the clinic much improved. November 10 his color was normal, his eyes clear, and he seemed to be well.

Did time permit, additional cases, such as Ludwig's angina, osteomyelitis and other infections and toxemias might be cited, which were due to chronic diseases of the jaws and mouth.

A casual ocular examination of the mouth is not always sufficient to demonstrate a blind alveolar abscess, since the tissues overlying the abscess may not always indicate its presence, but by careful scrutiny of the mouth by the eye, aided by an educated touch, a sharp steel probe and the radiograph, all such infected areas in the jaws may be discovered. Since the internist is not usually familiar with all of the pathology of the mouth, and has not the technic and facilities for examination of the mouth and teeth, if the best results are to be obtained, it is highly important that there should be more cooperation between internists and oral specialists.

Pyorrhea Alveolaris.—Pyorrhea alveolaris so called, or as better named phagedenic pericementitis, by Black, is a disease strictly of the peridental membrane. It is very common; more teeth are lost from it than from caries. It is indicated by a progressive destruction of the root membrane of the tooth commencing at the gingival border, generally accompanied by flow of pus and destruction of the alveolar walls. Pus appearing at the gum margin is not always a sign of pyorrhea, as will be shown later. The clinical picture of pyorrhea simulates, though it is not identical with, conditions brought about by indiscreet use of mercury.

Simple calcic inflammation of the gingivæ due to the deposit of salivary or serumal tartar, simulates pyorrhea alveolaris and is mistaken for it. If it be of the salivary type the lime deposited is at the gum margins, on the neck of the teeth, near the openings of the ducts from the salivary glands. If of the serumal type the lime is deposited just beneath the free

margin of the gums, both being productive of pus. Serumal deposits are generally found in pyorrhea pockets, but such deposits when formed are between the cervical margin of the peridental membrane and the root's apex; and the pockets must be there first; while serumal deposits in simple calcic inflammation of the gums are found under the gum margin, but above the occlusal attachment of the membrane. In addition to the physical appearances in pyorrhea, in extreme cases there is always present a peculiar odor which is distinctive. These are the chief characteristic differences between pyorrhea and calcic inflammation of the gums. The removal of all deposits, in simple calcic gingivitis and calcic pericementitis, with good hygiene afterward, usually suffices for a cure, if the removal has not been too long delayed.

The etiology of pyorrhea alveolaris is unknown. It has been attributed to gout, tuberculosis, syphilis, bacteria and other causes. Bacterial examination has often been resorted to in seeking a clue to the cause of the disease, and fungi have been found by Black,[7] Miller[8] and Archovey,[9] which were supposed to bear a causative relation to the disease, but neither have been able to prove the specificity of any one organism.

Independent of the findings of Black, Miller and Archovey, there are indications that pyorrhea is a germ disease, since almost universally persons having it holding close relations with each other, as man and wife, contract it, the one from the other, as the case may be. Children of parents having pyorrhea, when they become adults, are very subject to the disease. This is by no means a positive indication that the disease is infectious, but is suggestive.

The great variety of organisms found in the pockets about teeth affected with pyorrhea alveolaris renders the task of isolation exceedingly difficult.

Owing to the temporary closure of pyorrhea pockets about teeth on extension of infection, an acute condition is frequently observed. It simulates alveolar abscess and is often mistaken for that disease. During this stage, opportunity is afforded for the greater absorption of bacterial poisons and the escape of bacteria into the lymph and blood streams. It is to these causes that we should most commonly expect systemic participation from pyorrhea, rather than from the swallowing of pus liberated from pyorrhea pockets. However, we cannot ignore the danger to patients from the continual swallowing of this pus. True pyorrhea is very intractable to treatment. It may be cured if taken in time, and remain cured, provided the cooperation of the patient may be elicited in proper hygiene afterward.

With few exceptions, the attitude of the profession toward pyorrhea alveolaris, as in chronic alveolar abscess, has been one of indifference. That it should have been supposed that such a disease may exist indefinitely and not be productive of evil is surprising.

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7. Black: Amer. Syst. of Dentistry.
8. Miller: Microorganisms of the Human Mouth.
9. Archovey: Internat. Med. Congress, London, 1, 862.

Osler says:[10] "Of the twenty cases of pernicious anemia which I had under observation in 1909, pyorrhea alveolaris was present in more than half. Certain types of nephritis are also believed to be due to oral infection."

In the majority of extensive cases of pyorrhea alveolaris, much purulent matter is discharged into the mouth. Most of it goes direct to the stomach, while some of the bacteria and their products which have not been discharged into the mouth, may pass from the granulating walls of the pus pockets, through the lymph and blood channels, to all parts of the body. A question of paramount importance is, What effect do these poisons have on the system and what are their physical indications?

TUBERCULOSIS OF THE URINARY ORGANS*

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I have been requested to present in this symposium the subject of tuberculosis of the genito-urinary organs, with the exception of the genital organs of the female. I should like to do this from a clinical standpoint, and attempt in the short time at my disposal to draw a rough sketch of the work as it has impressed me in my own clinic.

In a discussion on tuberculosis of the genito-urinary organs, I want to remind you of the fact that our knowledge is of comparatively recent date. It is hardly necessary to refer to the fact that it was only in 1882 that Koch demonstrated to us the *Bacillus tuberculosis*, and until, I should say, about 1885 we regarded tuberculosis of the urinary tract as inoperable, as difficult of diagnosis, and as a field that was more interesting to the pathologist than to the clinician. I should date our present knowledge of genito-urinary tuberculosis from about 1890, the last twenty-one years, and to the very definite demonstration in about 1890 of the fact that we have in genito-urinary tuberculosis two distinct types, the genital and the urinary cases, which up to that time had been grouped together as one inseparable pathologic condition, and I can remember very well seeing cases before that time that were regarded as being tuberculosis primarily of the epididymis, and then extending to the bladder, and from the bladder to the kidney. We know now, of course, that the condition is very different, and our conception of genito-urinary tuberculosis is now very much the same as our conception of tuberculosis of the hip joint. In a child of 5 or 6 years of age, with a tuberculous lesion of the hip joint, we regard that as being an infection of the hip joint through the circulation. We believe in the majority of cases there is an infection usually through the air passages or alimentary tract; that later the lymphatic glands are involved, and that in addition to the involve-

10. Osler: Prac. of Med., p. 440.

* Read in a Symposium on Surgical Tuberculosis at a meeting of the South Side Branch, Chicago Medical Society, Nov. 28, 1911.

ment of the lymphatic glands we have the escape of tubercle bacilli into the general circulation, and some of the tubercle bacilli are carried to the hip joint to a point close to the line of epiphyseal cartilage and there meet conditions favorable for their development. We are not astonished in this picture to find but one hip involved in this hematogenous infection. We take it for granted that but few bacilli have found their way in the circulation, and that these have unfortunately found conditions in the one hip joint favorable for their development. The same conception should be carried to tuberculosis of the genito-urinary tract.

There are in the genito-urinary tract three positions which seem to favor the development of the tuberculous process when the tubercle bacilli are brought to these organs through the circulation. These three locations are, first, the kidney; second, the epididymis, and, third, the prostate, and on analysis of any of these cases of genito-urinary tuberculosis, you find practically without exception that one of these three anatomic locations is the original primary focus of the condition. I suppose that one can say without much hesitation that these foci in the kidney or epididymis or prostate can be called primary in the sense that they are the overshadowing locations of tuberculosis in the particular individual. The individual may not present clinically any other gross evidence of tuberculosis, but we should keep in mind the fact that they are not really primary, but that they are secondary to some invasion through the respiratory tract or the alimentary tract; although one must admit the possibility of such a condition as this either in hip-joint tuberculosis or in tuberculosis of the kidney; i. e., that the tubercle bacilli may find their way through the respiratory tract directly into the circulation, or through the alimentary tract directly into the circulation, within a limited time, without producing first any local involvement in a lymphatic gland. With this conception, then, of tuberculosis of the genito-urinary tract, let us discuss, first, tuberculosis of the kidney.

Tuberculosis of the kidney, like tuberculosis of the hip, is usually a primary affair. I should say, you would probably find both hips involved in tuberculosis in possibly one case out of twenty, thirty or fifty cases — I am not sure of the accepted statistics. I am rather inclined to think that in about the same proportion of cases both kidneys are primarily involved in the tuberculous process. The involvement in the kidneys is usually a fairly extensive one.

We have in our collection a large number of tuberculous kidneys, and we seldom find a kidney in which the process is at all limited. I think this (indicating) will represent a good type of the ordinary case. When you look at it, you will find that the process, although it is much more marked at the upper pole of the kidney, is very distinct both in the capsule behind and on the split surface of involvement throughout the entire kidney. That should be borne in mind because we suffered in some of our early work from the conception that we have in tuberculosis of the kidney frequently to deal with a limited process, and many of us resort to resection of the kidney with the hope that the resection might cure the disease. One can take this lesson from our pathologic specimen

that clinically when we operate on these cases they are so frequently riddled with tuberculosis that we can eliminate from consideration resection of the kidney as a means of cure. The tuberculous process very rapidly extends along the ureter.

You will see here a very beautiful specimen showing the wide extent of the tuberculous process along the ureter. I think one can accept this, as a rule, that the tuberculous process extends along the ureter and the ureteral orifice in the bladder and soon involves to a greater or less extent the bladder mucosa.

What is the natural history of tuberculosis of the kidney? I think one can say this, that in a limited number of cases a cure is effected. How is that cure brought about? Usually by the obstruction of the ureter, by the kidney becoming a sac filled with tuberculous débris. I have in several cases operated and found a thick fibrous sac filled with tuberculous débris without a single vestige of kidney material, with the ureter quite distended, extending evidently down to the bladder without any tubercle bacilli appearing in the urine at all, and evidently a complete obliteration of the ureter, the patient manifesting no symptoms whatever from that kidney. Undoubtedly these cures resemble very much the cures from psoas abscess in Pott's disease of the spine; there is a walling off of the tuberculous débris and eventually absorption of the abscess or its encapsulation in such a way as to prevent the condition giving rise to symptoms.

I have personally never seen a case of kidney tuberculosis which has healed by the development of cicatricial masses in the kidney itself. That they do occur, I believe has been shown, but they are rare.

Where the individual does not go on to this cure by obliteration of the kidney, the tuberculous process usually goes on to extensive involvement of the bladder and later involvement of other portions of the body. I suppose we must accept the possibility of ascending infection from the bladder from one kidney up the ureter on the other side. I am inclined to believe, however, it is not common, and that infection of the second kidney is hematogenous. We have infection of both hips in hip-joint disease, but we cannot imagine any ascending infection from one hip to the other; where the second hip does become involved it is a hematogenous infection, and the same thing occurs in the kidney.

The diagnosis of kidney tuberculosis to-day is not nearly as difficult as it was a few years ago. The first symptom is frequency of urination. The bladder symptoms stand out prominently: pain above Poupart's ligament, occasional hemorrhages, occasional pain in the region of the kidney; pain in the kidney involved is by no means a constant symptom. As a rule, we do have pain and discomfort in the kidney; occasionally severe renal colic, meaning usually obstruction of the ureter with blood and tuberculous débris, and a marked increase in the intrarenal tension, and in a limited number of cases we find a tumor. The diagnosis is usually made by a process of exclusion, this being done by means of the *x*-ray, the determination by cystoscopic examination of the condition of the opening of the orifice of the ureter in the bladder, and best of all,

discovering by the ureteral catheter the presence of abnormal urine from one side or occasionally from both sides and the demonstration of tubercle bacilli in the urine.

Within the last two years we have been finding tubercle bacilli fairly constantly in our cases of kidney tuberculosis. We used to regard that as an exceedingly difficult thing, and a few years ago I remember very well making the statement that we did not find tubercle bacilli in more than 50 per cent. of our cases, but I do not hesitate to say now that we find tubercle bacilli in 90 per cent. or more of cases of definite kidney tuberculosis. Occasionally one will have to depend on animal inoculation to demonstrate the tuberculous character of this lesion.

As to the treatment of kidney tuberculosis, I think we can make this statement with a good deal of confidence, that in primary tuberculosis of the kidney, if the case is seen early, and when it is limited to one kidney, and we can make that diagnosis with certainty by means of catheterization of the ureter, the life of the patient is very much safer with an early nephrectomy than by any other plan of treatment.

In the last year or two there has been a reaction against nephrectomy for kidney tuberculosis; it is, I believe, certainly entirely unwarranted. A nephrectomy for early tuberculosis gives a low mortality, and gives the patient a very much better prospect of permanent cure than any other means we have at our command.

What shall we do with the ureter in our nephrectomies? I am not at all satisfied with the way we handle the ureters. I dislike very much to make a very extensive and sweeping operation of exposing the entire ureter down to the bladder, and I have been handling recently the ureters after a nephrectomy by injecting them with carbolic acid and by ligating the ends of the ureters. I have tried bringing the ureter out and injecting it with iodin and with iodoform emulsion and with alcohol, and we have had some successful cases with these methods, and for a time I was inclined to believe that the use of alcohol, bringing the ureter out and stitching it in the wound was the preferable method. I am still open to conviction on this point, and the weak point at present in our nephrectomies for tuberculosis is the handling of the ureters.

In regard to the other treatment for kidney tuberculosis, I will say this, as Dr. McArthur emphasized in connection with tuberculosis of the alimentary tract, that the fresh air and out-door treatment which a patient with lung tuberculosis receives is of enormous value in all cases of surgical tuberculosis.

I am a little doubtful about tuberculin. I have used tuberculin, but I am not at all enthusiastic about it. I think it is difficult to demonstrate the relationship between the use of tuberculin either by the Wright method or by the use of greater doses and the resulting cure. I think the evidence furnished by orthopedic surgeons must be considered in this matter. The orthopedic surgeons, as a group, in handling large numbers of cases of tuberculosis are not very favorably impressed, I take it, by the value of tuberculin. I think tuberculin should be used, however, in these cases of kidney tuberculosis. In cases of tuberculosis of both kidneys

undoubtedly tuberculin and fresh air treatment would seem to be the most intelligent treatment that we can give these patients.

As to the final outcome, Dr. Louis Schmidt made a rather interesting statement to us at a recent meeting of the American Urological Society when discussing this matter. He stated that he was impressed with the fact that few of these cases of nephrectomy for bladder tuberculosis were cured in the sense that all of the tubercle bacilli disappeared from the urine. He quoted some evidence that had been recently offered to show that even where there was an apparent cure, and the patient was well and strong, had regained his weight, and had no symptoms, even in these cases careful examination of the urine often showed tubercle bacilli. I was very much impressed with that statement, and since hearing it in two cases in my own work we have been able to find tubercle bacilli in the urine, even though the patient in one instance had no symptoms. In the other case the nephrectomy wound had entirely healed, the child was strong and well apparently in appearance, but she had an incontinence which gave her a good deal of trouble, but did not seemingly interfere with her general health.

I asked Dr. Kretchmer to make a cystoscopic examination, which he did, and found the bladder was contracted down so that it only held about an ounce and a half of urine. She had extensive bladder tuberculosis extending from the ureter of the infected kidney; in spite of all this she was apparently well as far as her general condition was concerned.

The doctrine, as you know, has been, and we have preached it emphatically, that the bladder mucosa cleans up quite constantly after the removal of the primary focus. I believe we must look a little more carefully into this matter, and I shall be not at all surprised to find that in quite a large proportion of these cases the bladder mucosa has not cleaned up entirely even though the case is apparently clinically cured.

In regard to tuberculosis of the bladder from the kidney, I will simply make this statement, that it is a descending infection. We will accept the position now that primary tuberculosis of the bladder is exceedingly rare, if it ever occurs, and it is either secondary to a descending infection from the kidney or secondary to an ascending infection from the epididymis and vas deferens and seminal vesicles or an ascending infection from the prostate. I have never seen anything do any good in cases of bladder tuberculosis except rest, and that is a difficult thing to give a bladder in cases of tuberculosis because there are a great many drawbacks. If you drain such a bladder suprapubically you often get a tuberculous fistula, with extension of the process along the fistulous tract. The most satisfactory cases of tuberculosis of the bladder I have seen have been drained into the vagina, and in a few of these instances a good deal of relief has been given to the patients. From my own experience of bladder tuberculosis, I think the cases are good ones to leave alone as far as any direct interference is concerned, and I am inclined to think that these are cases where we should make the patients as comfortable as possible and trust largely to the fresh air treatment and to the use of tuberculin.

In connection with the use of tuberculin, we have had several cases of bladder tuberculosis where, in addition to the treatment, the autogenous vaccines from the colon have been used with apparently a great deal of benefit. That point should be emphasized in handling cases of tuberculosis of the bladder.

Tuberculosis of the epididymis is exceedingly common. Dr. Murphy described in a certain way tuberculosis of the epididymis when he discussed the subject of tuberculosis of the tubes. The conditions are very similar. In these cases the infection is hematogenous.

Tuberculosis of the epididymis should be handled early by surgical intervention, for in tuberculosis of the epididymis and tuberculosis of the vas deferens these structures have lost their function. I do not believe any cure of a tuberculosis of the epididymis or tuberculosis of the vas results in the restoration of function of these structures. By a comparatively simple and very safe procedure the epididymis and vas can be removed without depriving the patient of the benefit of his testicles, so far as internal secretions are concerned, and I believe we should take the position in tuberculosis of the epididymis and vas that the best procedure is early radical removal of the infected tissues. I should say, 40 per cent. or more of these cases can be cured by early surgical treatment. That has been our experience. I would add this, however, that without any question these patients with tuberculosis of the epididymis and of the vas should be given the same benefit of out-door and fresh air treatment as cases of tuberculosis of the lung. I have seen very startling cures where patients have refused operative interference in these cases from change of climate, the benefit of fresh air and feeding, thus increasing their resistance. We should add to this the use of tuberculin in minute doses.

When the process has extended to the seminal vesicles, I think we have a very serious picture. I have operated on a few of these deeply seated cases of genital tuberculosis, and I have not improved any of the patients. I doubt whether it is good surgery in the light of our present knowledge to operate on these cases of tuberculous involvement of the seminal vesicles. Of course, when we have a mixed infection with abscess, drainage should be resorted to, but I am inclined to handle these cases without mixed infection as we do cases of tuberculosis of the lung.

Tuberculosis of the prostate is sometimes primary. It is a rare thing. I have operated on three cases of tuberculosis of the prostate by prostatectomy. I think one can safely say that it is very much more rare than tuberculosis of the epididymis or tuberculosis of the kidney. My own conception of tuberculosis of the prostate would be this, that if we could find a case where the lesion is distinctly limited to the prostate and we could make an early complete removal, it would be the better procedure. Unfortunately, in most of these cases the process has widely extended before we operate on the patient, and on that account we should regard cases of tuberculosis of the prostate, as far as treatment is concerned, as belonging to the same group as the cases of lung tuberculosis; that they should be handled by tuberculin and by the general hygienic treatment for tuberculosis.

I have brought from our clinical museum a number of specimens from cases of tuberculosis of the genito-urinary tract. I will show you a number of kidneys which are involved in the tuberculous process. I want to repeat the statement which I made, that these show quite clearly, without exception, the widespread involvement.

Look at these specimens and see how impossible it would be to consider anything except a nephrectomy.

In addition to the kidney specimen, we have some interesting specimens of kidney tuberculosis with occlusion of the ureter.

Here is a specimen of tuberculosis of the bladder, ureter and kidney in a case of tuberculous meningitis. This specimen was removed post mortem.

I show you now a very beautiful specimen of tuberculosis of the prostate. Almost the entire prostate is involved in the tuberculous process.

Here is a specimen of chronic tuberculosis of the urinary bladder, showing great thickening of the bladder wall, and great contraction.

Here is a specimen of tuberculosis not only of the epididymis, but also of the testicle. Here is another specimen of chronic tuberculosis of both the testicle and epididymis. Clinically if cases of tuberculosis of the testicle are seen early, the tuberculous process is limited largely to the epididymis.

Here is a case of ascending genital tuberculosis, beginning in the epididymis and extending to the vas deferens, seminal vesicles and prostate.

Here are two more specimens illustrating tuberculosis of the epididymis.

In conclusion, I should like to make this statement: We are in a position to-day of looking at this entire group of cases, where the internist and general surgeon and genito-urinary surgeon can very well meet on common ground. It is not an intelligent thing for the internist to say to-day that these cases of genito-urinary tuberculosis should be handled with tuberculin and with fresh air and outdoor treatment. On the other hand, it is not an intelligent position for the surgeon to take to-day that these cases of genito-urinary tuberculosis should be handled all by operative measures. Enough light has been thrown on this subject to show the great value of surgical treatment in tuberculosis of the genito-urinary organs. A great flood of light has been thrown on these cases to-day, showing the great value of proper medical management, and undoubtedly many of them can be handled by medical management alone, some of them largely by surgical management, but most of them must be regarded as cases which can be handled properly by the combined medical and surgical treatment.

TUBERCULOSIS OF THE ALIMENTARY CANAL AND PERITONEUM *

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The atria of invasion of the peritoneum in tuberculosis may be classified as follows: (*a*) through the female genitalia; (*b*) through the alimentary tract; (*c*) through the subperitoneal lymphatic glands; (*d*) through diffuse general miliary tuberculosis — through the blood stream.

Tuberculosis of the peritoneum is more commonly secondary to the tube than any other primary lesion.

Tuberculosis of the mucosa of the tube is present a long time before we are called to attend and receive a history of the case; we believe it is reparative and does completely heal. In the large percentage of cases that have come under our observation it does not heal spontaneously until the fimbriated end of the tube is closed. Tuberculosis of the endosalpinx is the only type of infection of the tube that continues with the abdominal atrium or fimbriated end open. In all other varieties of infection of the tube the fimbriated end becomes rapidly sealed and adherent to the neighboring structures but in simple tuberculosis of the tube it remains open, repeatedly ejecting tuberculous débris into the peritoneum. In unmixed infection the tube remains open, accounting for the recurrent attacks of peritonitis we have as a result of that form of invasion.

In the management of that class of cases formerly we considered it was sufficient to open and drain the peritoneum but unless we induced mild infection so as to seal the end of the tube by adhesions, the treatment was ineffectual and the attacks recurred. The only way to cure it permanently is to remove the tube close to the uterus, excising it from the body at the cornu of the uterus.

In the next variety, in the genital tract, we have tuberculosis occurring in the endometrium of the uterus. We have had two observations of that kind, one occurring in my own and one in the practice of Professor Bastianelli of Rome. I happened to have been in the clinic of this surgeon when he began to do a curettement and penetrated the wall of the uterus. He could not understand why the instrument went through the uterus so readily. He was curetting because the patient was having excessive menstruation. He immediately did a laparotomy and found that there was a tuberculous ulcer which had penetrated to the peritoneal surface of the uterus, and the curet escaped at this point. On the posterior surface of the uterus and broad ligament there were a number of tubercular deposits. In my case we had three deposits in the wall of the uterus in different positions; in each of these the tuberculous eruption came from beneath the peritoneum, but there were no tubercles at a distance except those which one could trace to the lymphatics, differing from the deposits we get on the peritoneal surface from tubal foci.

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I have never seen a case of primary ovarian tuberculosis; they were all cases in which the tube had become adherent to the ovary, the latter forming a tubo-ovarian tuberculosis the same as tubo-ovarian abscesses are formed. The follicle ruptures, the tube becomes attached over the opening and thus infects the ovary. Thus it will be seen that in that class of cases the tubal infection is primary, and infection of the ovary is secondary. Cases have been reported as infections of the follicle through the rupture of tuberculomata into the peritoneal cavity. This we believe is the exceptional route of ovarian infection.

As to the frequency of direct infection of the peritoneal surface by perforation through the walls of the appendix, the caput coli, the large intestine, stomach and duodenum, we believe it practically never occurs. The appendix and cecum are most commonly infected and their coverings are invaded from beneath. I have never seen a case of general tuberculosis of the peritoneum from a perforation of the appendix giving a surface tuberculosis. I have seen extensive tuberculosis of the peritoneum of the second degree type, with no evidence of direct perforation and no evidence of tuberculosis anywhere else except in the appendix.

From a pathologic standpoint we may divide tuberculosis of the peritoneum into three classes:

1. The catarrhal variety, in which there is a great amount of effusion, with deposits of tubercle on the surface.

2. The agglutinated variety where we have slimy, cobweb adhesions so characteristic and typical of tuberculous peritonitis.

3. The circumscribed, encapsulated, caseous variety in which there is liquid tuberculous débris, with destruction of the peritoneal coat of the bowel, and circumscribed organic encapsulations always resulting in permanent peritoneal adhesions. It is impossible in this variety to tell where the primary infection came from in a large percentage of the cases.

Tuberculosis of the caput coli rarely involves the general peritoneum. The hypertrophic variety of tuberculosis of the cecum is quite common, but not as common as it is in the sigmoid. I have never seen a case of tuberculosis of the ileum produce a general tuberculosis of the peritoneum. I have seen cases of extensive tuberculosis of the ileum, in one of which I removed fifty-nine inches of the ileum for tuberculosis. The peritoneum was not infected. The mesenteric glands were in a state of tuberculous liquefaction but had not ruptured. I have never seen a case of tuberculosis of the stomach, nor have I had a case of tuberculosis of the duodenum.

In the small intestines cases of tuberculosis occur near the ileocecal valve more frequently than in any other position.

As to the treatment of peritoneal tuberculosis, from a surgical standpoint we have two ideas in mind. First, if the tuberculosis is circumscribed, is limited to the intestine, if there is no material involvement of the peritoneum, then resection of the circumscribed portion of the intestines is decidedly the operation of election; but if the peritoneum is greatly involved, resection of the intestines is not at all a safe procedure. In many instances in these resections we have failure of union,

and the development of a fistula, which it is practically impossible to heal.

The plan mentioned by Dr. McArthur to-night is one that gives great satisfaction. Another plan consists in performing an appendectomy, washing the intestinal contents out through this opening or through an opening made in some other portion of the alimentary tract. Still another plan is the exclusion of the tuberculous zone of the intestines. If the tuberculous process involves the large intestine we may exclude its greater portion from the fecal current by an end-to-side anastomosis of the ileum to the sigmoid, thus obtaining the same or a better result than from free irrigation. In the small intestine also where we are unable to make resection we may sidetrack or exclude by short circuiting the diseased portion by dividing the bowel, closing the blind end, transposing the proximal end and attaching it below the diseased portion, thereby cutting the diseased portion out of the fecal circulation.

As to the use of tuberculin in connection with these conditions up to the time Paul Goodman presented his four specimens of *complete* repair of tuberculosis of the intestine to the Pathologic Society in Berlin, in 1892, there had never been reported an authentic case of healed tuberculosis of the intestine. Virchow had never seen a case of healed tuberculosis of the intestine. Paul Goodman saw these cases, treated them with tuberculin, presented his specimens and Virchow believed they were the first cases of healed tuberculosis of the intestines. These cases had extensive pulmonary tuberculosis from which they succumbed, in addition to the intestinal tuberculosis; he thus had an opportunity to present the specimens.

Dr. Mack does not report his case as cured. Whether we shall have to give *large doses* of *tuberculin* in tuberculosis of the intestines to obtain the best results, remains to be determined. In our experience with tuberculosis of the intestines we have used tuberculin in small doses with strikingly good effect.

As to tuberculous peritonitis from mesenteric adenitis, I have seen a few of these cases, the mesenteric gland having become infected without leaving an induration in the intestinal mucosa at the atrium of invasion. The atrium invasion is not one of ulceration but one of involvement by tubercle bacilli entering the subepithelial space thus gaining entrance to the lymph-glands, just as cervical adenitis occurs through the pharyngeal mucosa or tonsil without tuberculous ulceration. The glands break down, liquefy and rupture into the free peritoneum, producing a general disseminated tuberculosis of the surface of the peritoneum; the gland itself heals and shuts off the source of tuberculous supply. Occasionally if the patient is seen in the acute attack the gland is open, as was our experience on two occasions. I believe the mesenteric glands are common sources of tuberculous peritonitis.

As to the diagnosis of tuberculous peritonitis, it can be made in a considerable percentage of cases. From my experience it is easier to make the diagnosis in the female than in the male. The thickened leathery condition of the Douglas pouch is one of the striking signs of this disease in the female.

There is no fixation of the tubes such as there is in ordinary gonococcic salpingitis. A doughy resistance of the abdomen is very common, together with a doughy reaction of the abdominal skin after twisting (Deck's sign). The tuberculin reaction aids one materially in making the diagnosis. Circumscribed flatness in encapsulated tuberculosis of the cystic type assists in the differential.

With regard to the treatment of tuberculous peritonitis as it comes under our observation; even where the tube is patent, medical means should be resorted to. We do not open the abdomen any more or at least as frequently as we formerly did, but give the patient tuberculin, developing a constitutional condition favorable to the repair of the tuberculosis. No tissue in the body undergoes repair from tuberculosis so readily as the peritoneum, provided the source of tuberculous débris supply is cut off.

In the cystic variety an opening is made for the purpose of relieving fluid tension and inserting some irritant which induces an inflammatory tissue reaction and polynuclear cytosis in the cavity, such as iodoform, camphor oil, Venice turpentine, etc.

In the third degree of tuberculosis the surgery is that of *masterly inactivity*. Wherever tuberculous deposits exist which are circumscribed, encapsulated, breaking down and cheesy they should not be disturbed. They are safe through their encapsulation and if meddled with a fistula may result which will not close. Such fistulas do not heal and repair as do fistulas from other pathologic conditions. Drainage of the free peritoneum should never be resorted to. There is no occasion for attacking circumscribed tuberculosis of the peritoneum in cases of mixed infection, except when there is great elevation of temperature and other evidences of pus intoxication. Opening admits of additional mixed infection whether the lesion is pulmonary, renal, mesenteric or osseous. The mixed infection is what hastens tissue destruction and makes the case more serious.

In drainage of circumscribed tuberculous abscesses of the peritoneum where the patient has a high temperature, and the infection is mixed, there is no contra-indication to the opening of such abscesses and draining them, hoping that they may heal. It makes very little difference whether we use oil or some other type of irrigating fluid in such cases. I have used iodin and Venice turpentine and formalin to stimulate the repair of sinuses, and I have found that they heal with equal slowness, if at all. The *greatest improvement* in *results* has been made through a *properly administered tuberculin treatment*. There is no medicament in the entire range of therapeutics where the patient's individual equation must be so accurately estimated and tested to obtain the best results as in the administration of tuberculin. The negative opinions on the value of tuberculin are based: (1) on a defective knowledge of the rôle of opsonins in the process of repair; (2) on evil results obtained through improper administration of the remedy; and (3) on assumed superior judgment with neither knowledge nor experience to support it. The dosage must be studied in each individual case, as one patient may be given 10,000 times the dose of another and the larger dose be too small and the smaller dose be too large to obtain the best opsonic result.

REMARKS ON TUBERCULOSIS OF THE FEMALE GENITALIA*

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There have recently appeared in the *Archiv für Gynäkologie* two articles on tuberculosis of the female genital organs based on post-mortem studies of nearly 10,000 women and girls. Schlimpert of Dresden based his work on 3,514 autopsies, and Simmonds of Hamburg founded his on 6,000. Clinical observations are often misleading and the examination of internal genitals removed at operations gives little idea as to the relative importance of genital tuberculosis and that of other organs. These researches, based on exact anatomical observation in the dead-house, shed some new light on the subject.

Schlimpert's material came from a people deep in poverty. Of his 3,514 subjects, 2,173 had tuberculous lesions of some sort; in 84 per cent. the lung was affected; in 32 per cent. the alimentary tract; in 5 per cent. the peritoneum; 3.5 per cent. of his cases showed tuberculosis of the genitalia, namely, seventy-three of the 2,173. Simmonds, in 6,000 autopsies on the bodies of females, found tuberculosis of the genitals in eighty, namely, 1.33 per cent. Schlimpert's cases of genital tuberculosis were 2 + per cent. of all the cases examined. Schram, who reported in 1882 the results of a study of the post-mortem material of the Dresden institution, found tuberculosis of the genitals in thirty-four out of 3,386 female cadavers examined, namely, 1 + per cent.

In nearly all of the cases there is tuberculosis in other parts of the body besides the genitalia. In over 90 per cent. there is tuberculosis of the lung; in 11 per cent. of the urinary system; in 60 per cent. of the peritoneum. In most instances the older lesions appear to be in the other organs than the genitals. The cheesy deposits and the cicatrized foci are usually found in the lungs or in the mesenteric glands, while the nodular tubercles and the bacillary catarrh will be found in the tubes or the uterus. Often, indeed, there will be also fresh tubercular processes manifest in the respiratory or alimentary organs.

When we come to consider the different organs of the genitals in connection with tuberculosis we find that the tubes lead in frequency, the uterus comes next. In half of Schlimpert's cases the uterus and one or both tubes were simultaneously affected and in two-thirds of those of Simmonds. Isolated tubercular infection of the vagina occurs in less than 5 per cent. of genital tuberculosis and even infection of the vagina in company with that of other parts of the genital tract is uncommon. Of all the genital organs the ovaries are the least liable to tuberculous disease, according to the observations of Simmonds and Schlimpert. Other authors, not basing their conclusions on anatomical material, how-

* Read before the South Side Branch of the Chicago Medical Society, Nov. 28, 1911.

ever, give much more importance to ovarian tuberculosis, estimating it to occur in from 33 to 60 per cent. of genital tuberculous cases.

Tuberculosis in the tubes causes thickening and increased torsion with formation of creamy or cheesy contents. In half of the cases the abdominal ostium is found open. In many there are extensive adhesions of the tubes to the surrounding organs and to each other. The process appears to be of greatest intensity at the abdominal end of the tube. The uterine end is often free, even when examined microscopically. When the ostium is closed there is frequently considerable dilatation of the ampullar end. The general appearance is often like that of any pyosalpinx. One-quarter of the adnexa removed at Martin's clinic in Greifswald showed tuberculosis. The mucosa is usually studded with tubercles macroscopically and microscopically. In many others the mucous layer seems covered with a grayish coating showing no typical tubercles even under the microscope, but the superficial layers desquamated and necrotic and with far more bacilli than in the nodular form. Sometimes there is a bacillary catarrh; that is, the lumen is filled with a mucous fluid and there is no other pathologic appearance except the presence of numerous bacilli in the fluid. This is probably an early form.

In the uterus one finds less often the nodular form but more often the necrotic endometritis similar to the necrotic salpingitis already described. Serial sections often demonstrate that what appeared as isolated nodules are really lymph channels filled up with tuberculous material. These may run into the myometrium. The disease is usually confined to the body of the uterus and the cervix is usually free, except in far advanced cases. As in the tubes, the tuberculosis commonly takes its first seat in the superficial mucous layer surrounding the lumen.

There are several possible sources of infection of the genital system with tuberculosis: first, from the outside through the vulva and vagina; second, from neighboring organs; third, from the infected placenta; fourth, from the blood stream.

That infection is possible through the external genitals must be admitted, although the researches of almost all authorities show this method to be extremely rare. In Schlimpert's series there was no instance of primary isolated tuberculosis of the genitals. In Simmonds' series there were only four such cases, and in none of these was the route of infection proved to be by way of the external world through the vulva. In one of the four the patient was 71 years old at the time of death. The uterus was filled with tuberculous pus but there was an old cicatricial closure of the cervix which prevented any communication from the vagina. Another subject was a widow aged 69 who died of pneumonia and whose tubes were intact but who had fresh tuberculous deposits in the endometrium. The third case was a woman of 31 years who was taken with acute parametritis a few weeks after marriage and who died of peritonitis resulting from perforation into the rectum and peritoneum. The uterus and vagina were absolutely free but there was double tubercular pyosalpinx. The case appeared to be one of gonorrheal salpingitis later infected with tuberculosis. The fourth case was a young woman

of 31 whose husband died of phthisis six months before her death. He, however, had no trace of genital tuberculosis. On account of metrorrhagia curettage was done and in the matter removed giant-celled tubercles were found. The extirpation of the uterus and tubes was followed by a fatal peritonitis. The autopsy showed the lungs free, a few nodules in the pelvic peritoneum, the tubes and uterus were already found to be tuberculous, the vagina, cervix and vulva were free. In this last case there is a strong probability that the tuberculous infection entered by the external genitals during coitus, although the husband had no genital tuberculosis and the woman had none in the vulva or vagina. There is always a possibility of the carrying of bacilli from infected semen or from an unclean penis upward into the female genital canal by means of the motile spermatozoa. In this connection Friedmann's experiment may be noted. He found that, eight days after injecting tubercle bacilli into the vaginas of rabbits just after coitus, bacilli were always found in the embryos. Marital infection with tuberculosis is probably rarely by way of the genitals but almost if not entirely by way of the more usual avenues, especially the mouth.

From neighboring anatomical structures infection may spread to the genitals. In a few instances the infection may extent from the lower bowel or the bladder. More often it comes from the peritoneum. In none of Schlimpert's cases did the process appear to have come to the peritoneum from the genital organs, but in seven cases the peritoneal tuberculosis was apparently the origin of that in the genitals. Simmonds' conclusions were directly opposite to those of Schlimpert. He found tuberculosis of the peritoneum in forty-five of his eighty cases of genital tuberculosis, without counting the many certainly secondary nodules in the cul-de-sac of Douglas in cases of tubal tuberculosis. In many cases the age of the process in the tubes was evidently greater than that in the peritoneum. In many also the chief tubercular deposits in the peritoneum were in the direct neighborhood of the abdominal ends of the tubes. Simmonds concludes that, in the vast majority of instances of tuberculosis of both genitals and peritoneum, the process in the genitals is the cause and not the result of that of the peritoneum. On the other hand, the entrance of bacilli through the open ostium from the peritoneum doubtless does occur. This appeared to be so in four of his cases. Baumgarten's experimental tuberculosis of the peritoneum in animals was never followed by the disease in the tubes. His observations bear out the theory that the infection rarely travels from peritoneum to tubes but rather vice versa.

In none of the cases of Simmonds or Schlimpert was the infection proved to be from the placental site but in two it was possible. Of course even here the ultimate cause may have been hematogenous. Of Schlimpert's series hematogenous origin was possible in sixty-seven of the seventy-three, and probable in twenty-eight. In only five of Simmond's eighty cases of genital tuberculosis were tuberculous areas in other portions of the body wanting. The first manifestation in the genital organs is in the great majority of cases in the tubes and here are found the

oldest lesions as shown by their cheesy character, the great cicatrization around the deposits and the rather frequent calcareous formations. From the tubes the infection often extends in the direction of the flow of mucus into the uterus. Rarely does it pass the internal os.

Studies of anatomical material have usually shown that tuberculosis of the female genitalia is a disorder of a minor grade as compared with tuberculosis of other portions of the body. In none of the cases of either Schlimpert or Simmonds was the genital disease the cause of death. So much more important was the disease elsewhere that in only three of the cases did the subjects come to the dead-house from the gynecologic wards.

We will perhaps be pardoned some conclusions in respect to treatment of genital tuberculosis in the female. In most text-books and in many articles in journals even of a recent date, more or less radical operation is recommended. Thus August Martin, at the 1908 meeting of the American Medical Association in Chicago, advised that tubercular ulcerations of the vulva and vagina be removed by the curet and by strong astringents, and that internal organs of the genitalia be removed when hopelessly invaded by the tubercular process. On the other hand, Martin preferred to remove only those organs and parts of organs which were so thoroughly diseased that healing seemed impossible. Many others recommend removal of affected tubes, ovaries and even the whole of the uterus, provided the general condition of the body will permit of operation. Winter even advises the extirpation of apparently normal tubes when the abdomen is opened for tubercular peritonitis. The existence of tubercular lesions elsewhere in the body, even in the lung, is not considered by many as sufficient contra-indication for operation.

It appears to me that the modern disinclination to operate in tubercular disease which is manifest among the most progressive surgeons has not extended to the gynecologic surgeon as much as it should. Notable exceptions are Schauta, Bumm and Doederlein. In the discussion on urogenital tuberculosis at the last German gynecological congress there were, however, many conservative speakers. The fact that the primary mortality in operations on the tuberculous genitals is high, ranging from 10 to 13 per cent., that the disease in the genitals is not in itself deadly, and that the primary focus is usually inaccessible, were points brought out by the conservatives. We hear very little now about operating on the tuberculous lung. The orthopedist rarely performs radical operations on tuberculous bones and joints. Tuberculous kidneys are allowed to remain undisturbed more often than formerly. A tuberculous bladder is not often scraped. There are still many general surgeons, expert in operative gymnastics, who operate radically on tubercular lymphatic glands, but even among general surgeons protests are being heard against this procedure. The tendency in treatment of tuberculosis anywhere in the body is to employ rest, local and general, and the modern hygienic antituberculous methods. In general tuberculosis may be said to be a disease which tends to recovery when treated early by measures which have for their object the keeping of the body in its highest state of nutrition.

Rest is an important item in the modern treatment. Only the very minimum of exercise is permitted. Pleasant surroundings are essential and congenial companionship. Nutrition is brought to its highest pitch by the use of the easiest digested and the most highly concentrated foods. Above all is fresh air held to be indispensable. Smoke, dust and noxious vapors are avoided by treating tubercular patients as far as possible in the country. In short, everything is done to preserve what strength and vitality the patient already possesses and to enable his body to accumulate more and more. The shock of operation, the irritating effects of ether, the inhalation of buccal and nasal fluids with the deep breaths of the anesthetic coma, the nausea and other digestive disturbances for days afterward, the loss of blood, the necessary diminution in the ingestion of food, the depressing effects of hospital life, and the lack of fresh, pure air are all great handicaps inseparable from any operation. All these things are bad for a patient suffering from tuberculosis and all are antagonistic to the general trend of modern treatment of tuberculosis.

Experience seems to show that tubercular peritonitis may often be cured by simple drainage of the abdomen. A large number of cases of tubercular peritonitis are probably caused by tuberculosis of the tubes. Again, many times the diagnosis of tuberculosis of both peritoneum and of tubes is made at the time of the laparotomy. Therefore, with the abdomen already opened, it is proper to remove evidently tubercular tubes, provided that they are not firmly adherent and provided that such removal is easy and speedy. This admission does not commit me to advising hysterectomy when the uterus is found or believed to be tuberculous. The uterus is not the continual feeder to the peritonitis which the tube is. Furthermore, even in expert hands, hysterectomy is a far more shocking and dangerous operation than removal of slightly diseased tubes. It also opens up far more vascular and lymphatic channels and therefore tends much more to extension of the local tuberculosis to adjacent and remote parts of the body.

Again, what is the use of subjecting the patient to the dangers of operation in order to remove organs which are usually only a secondary feature in the tuberculosis from which the patient is suffering? In the vast majority of instances there are other foci elsewhere in the body, almost always in the lung. The tuberculosis of the genital organs is very seldom or never the cause of death. The removal of such organs can very rarely remove all the tuberculosis. It even may liberate into the vascular system bacilli which were comparatively harmless in their former location. Local operation in most cases of tuberculosis of the female genitalia with the hope of curing the patient may be compared to putting on a fur cap when one is freezing to death because of insufficient clothing. In the great majority of cases the chances of the patient will be better with hygienic antitubercular treatment.

JOINT TUBERCULOSIS*

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I know little of bone tuberculosis except as a part of joint tuberculosis. My remarks will be confined to that despite the fact that I am on the program for a paper on "Tuberculosis of the Bones and Joints."

Dr. Frank Lydston once said that he opposed raising the standard of requirements for admission to medical schools and also opposed raising the standard of teaching in the schools; that he thought about all a medical student ought to be taught was to whom to refer his patients. In covering the subject of joint tuberculosis in the time allotted to me at this meeting I can hardly be expected to tell you more than to whom to refer your patients. However, the general practitioner and the specialist in other lines ought to be able to make a diagnosis in the average case of joint tuberculosis, and ought also to have a clear idea of the general principles of treatment and the prognosis as to life, duration of treatment and ultimate result.

The onset of joint tuberculosis is insidious and slow, and at times intermittent. In this it differs from joint troubles due to traumatisms and to the acute infections of joints; but does not differ from osteo-arthritis in this respect. The first objective symptom is the restriction of motion at the joint to some extent and in every direction. This restriction, due to involuntary muscular action, is peculiar to joint tuberculosis, and differs from the restriction in osteo-arthritic, hysterical and all other kinds of stiffness at the joint. It is a "live" restriction as compared with the "dead" resistance of cured joints. It always stops at a certain place and has no elastic feel, whereas the hysterical joint stops sometimes at one place and sometimes at another and usually springs back with an elastic resistance. This involuntary muscular resistance must be learned with the hand by the sense of touch and not with the ear by the sense of hearing it described.

Atrophy of the muscles controlling motion of the diseased joint is a very constant symptom; I have found it absent in only one or two instances. Muscular atrophy does not occur in cases with hysterical joints, but it may occur in osteo-arthritis. Muscular atrophy is a progressive condition; a small limb may be congenital and not progressive in its comparison with the other limb. Pain is a pretty constant symptom in tuberculous joint cases; usually coming on some weeks or months after the onset of stiffness; but it may be absent from start to finish. If present it is usually intermittent as compared with the constant dull ache of osteo-arthritis and the progressively increasing pain of malignant bone disease. It is not usually a local pain at the seat of disease, but a "distant" pain, as the knee pain of hip disease and the belly-ache of Pott's disease. The pain in joint tuberculosis usually subsides after the joint

* Read in a Symposium on Surgical Tuberculosis at a meeting of the South Side Branch, Chicago Medical Society, Nov. 28, 1911.

has been immobilized and the patient put in bed for two or three weeks. But the pain of malignant bone disease is not relieved by protection and rest. Joint tenderness and joint sensitiveness may be present or absent in almost any joint disease and therefore is not of value in differential diagnosis.

The "cold abscess" of tuberculous joint disease. containing ichor, and not pus, is a very valuable evidence if present, but it is present to the touch and sight in only about half of the cases. The same may be said of fever. In about half of the cases in the progressive stage of joint tuberculosis there is an elevation of the afternoon temperature amounting to 0.5° to 1.5°. It is corroborative, but not of diagnostic value.

The use of tuberculin in the diagnosis of joint disease I condemn, believing it to be worthless in safe doses and harmful in diagnostic doses. A really good *x*-ray picture interpreted by one having experience in interpreting *x*-ray pictures is of diagnostic value.

The prognosis as to life is about 90 per cent. good; as to duration, from two to six years with treatment, but much longer without treatment. As to deformity, early cases treated efficiently can usually be cured without deformity; in later cases where deformity has been allowed to develop, the deformity can be made less and sometimes wiped out. The ultimate joint motion depends on the amount of bone destruction and repair, and the duration of the disease. A few cases recover with normal motion; a few with no motion; most cases have some degree of useful motion. The presence or absence of tubercular abscesses does not seem to play much part in the amount of stiffness that ultimately results.

The principles of treatment are:

1. To correct the deformity as rapidly as possible with safety to the patient. This should be done gradually; not rapidly with the patient anesthetized, because forcible correction of the deformity under an anesthetic is followed every now and then by tubercular meningitis and death.

2. Protection from weight bearing when the disease is in the spine or lower limbs by putting the patient in recumbency at least until the deformity is corrected and there is little or no tendency for deformity to again develop.

3. To immobilize the diseased joint by plaster splint, or steel brace, or some mechanical device.

There comes a time, however, during convalescence, when a gradual restoration of some degree of functional activity hastens the cure. The choice between treating tuberculous joints by plaster splints, or steel braces or other mechanical device must rest with the surgeon. He should use the splint or brace as a tool and choose the one that he can use best. But no man should use a steel brace unless he himself can make the measurements, draw the specifications, and fit the brace, even go into the shop and make the brace if necessary. The surgeon who cannot do this himself is not competent to treat a case with a brace.

As to the treatment of tuberculous abscesses, so long as they are tuberculous abscesses, they should be left alone.

DISCUSSION ON SYMPOSIUM ON SURGICAL TUBERCULOSIS

Dr. William Fuller: After hearing such a splendid symposium on tuberculosis as we have listened to to-night, one with moderate experience in such work can, in discussing it, do little more than ask a few questions with the hope that it will serve to bring out by the essayists in closing a little more clearly some of the points touched upon by them when presenting the subject. Aside from this I desire to refer to a few points on tuberculous peritonitis: First, is the error which I think has been made by some writers in their efforts to classify the subject into several forms or varieties. Knowing as we do the histology of tubercle, and the pathology of this disease, it seems needless and unnecessary to recognize more than one form of the disease; let us remember that the different clinical pictures which we see sometimes are merely different stages of a single disease; the progress towards recovery or otherwise of a disease with but one pathologic picture.

Secondly, I believe it a mistake to lay too much stress on the symptoms of this disease. In no way do I decry symptomatology, but believe if we wait till such symptoms as large peritoneal effusions, abdominal tumor masses, loss of weight, etc., appear, that little can be done with any kind of treatment. The symptom so beautifully described by Thomayer, the retraction of the mesentery and the displacing of the intestines to one side of the abdomen, creating thereby unequal tympanitic areas in the abdomen, is pathognomonic of tuberculosis of the peritoneum. But who among us cares to wait till such symptoms as these occur before making a diagnosis. I take it that before any of the symptoms are marked the diagnosis should be made if treatment is to avail much; a diagnosis of non-clinical rather than clinical tuberculosis.

As to what surgical treatment may do in tuberculous peritonitis I am not in a position to say. I have operated on a few cases that got well; on a few that died. I have treated some expectantly that lived, and others that did not. Whether those that lived after the operation would have done so with other treatment I cannot say; or those dying without operation would have lived if operated on, is also unknown to me. In this connection, however, I wish to ask a question: If such an unlimited disease as tuberculous peritonitis is cured by such a limited amount of surgical work as is the operation as generally done for tuberculous peritonitis, is such true in tuberculosis of any other organ or tissue of the body?

Will the admission of sunlight and air into a bone or joint cavity cure tuberculosis there? This alone is believed by some to be the factor responsible for many cures in the operations for tuberculous peritonitis. Why will the mere opening into a focus of tuberculosis in one locality cure the lesion if such a procedure elsewhere will not only fail, but increase to a great extent, the severity of the lesion?

I was pleased to hear Dr. Murphy say that the trend of the times is towards non-surgical treatment. I believe this is correct, but am inclined to feel that in many cases diagnosed early, surgery may eliminate a major portion of the diseased structures and is therefore the best treatment under such circumstances.

Now a word as to tuberculosis of the kidney. The value of nephrectomy in most instances cannot be questioned. In the specimens here presented, the question has been asked if anything short of this would have sufficed. No surgeon could take exception to this plan of treatment in tuberculous kidney disease advanced to the stage of the disease exhibited by these specimens. But let us all remember in the worst of the specimens here shown, that one day this kidney was normal; one day it had in all probability a single focus of disease, limited to one pole, or the distribution of a single arterial branch as some cases are in the beginning and for a long time thereafter. Suppose at that time the diagnosis could have been made, or the kidney operated on for some other condition supposedly, and this localized lesion of tuberculosis bound, what then? Would a nephrectomy be justified? Such cases are found, not often it is true, but when met with should not be treated as are cases with the kidney riddled with tuberculous disease. Resection of a kidney for tuberculosis has a place in the treatment of this disease.

No better evidence is wanted than to call to mind how ureteral and vesical tuberculosis will clear up when the diseased kidney is removed. These organs do not always, of course, undergo a cure with the kidney removed, but that they have undergone such changes thousands of times perhaps, no one can deny. If this is true is it more unreasonable to expect a remaining and major portion of a diseased kidney to regain its normal state after a portion of it has been removed; and further, after many tuberculous kidneys are cured by non-surgical treatment and with no operation at all?

Dr. Harry Kahn: I have been asked to discuss tuberculosis of the ear, nose and throat in connection with this symposium. It is a difficult task to cover the whole field in the time allotted. I will therefore but outline the subject.

Tuberculosis of the upper respiratory tract manifests itself in four forms, namely, as infiltration, ulceration, tumor and perichondritis. These four forms may occur separately or may be variously combined. The lesions may be primary or secondary. The nose is usually attacked at its entrance or on the septum which is very often perforated by the process. Occasionally one finds tuberculous sinusitis. Tuberculosis of the larynx is rarely primary, but generally secondary to tuberculosis of the lungs, and it may be considered a surgical disease and may be attacked surgically if the tuberculosis of the lungs is quiescent or not far advanced, or it may be attacked according to the method of Gottstein by applying the actual cautery to the tuberculous lesion.

The principal point I wish to bring out is the etiologic relation of the parts of the drainage area of the lymphatic glands of the neck to the tubercular infection of these glands. The literature shows two opinions as to the mode of infection. 1. Ascending infection from the secondary tuberculosis of the bronchial and mediastinal glands. Neuman[1] was probably the last to hold the view. 2. Descending infections from some portion of the lymph drainage apparatus, is the now most generally accepted theory. This was recognized as early as 1879 by Cohenheim. To particularize categorically the results of a search the literature may be summed up as follows:

1. Cutaneous lesions of the scalp and face. The tubercular nature of lupus is well established. But few cases are on record secondary to this. A case of Leloir in the Ann. de dermatol. et syph., 1886, p. 332, is the only case that can be referred to.

2. Chronic otorrhea of the tubercular variety may be shown to be the cause in some cases, and in more cases than we are at present aware.

3. Lesions of the mouth and naso-pharynx are seen now and then but the infections of the glands of the neck seldom follow.

4. Dental caries. The importance of carious teeth has been variously estimated. Garre estimates 50 per cent. and Starchy 40 per cent. Conet produced experimental tubercular infection of the teeth of guinea pigs which was followed by tubercular glands of the neck.

5. Tonsils, faucial, pharyngeal and lingual, are also an important source of infection of the glands principally the deep set. Previous to 1884 tuberculosis of the tonsil was supposed not to exist but Strassman[2] showed this view to be erroneous. And since that time the tonsillar tissue has been considered to be the avenue of infection of at least a portion of the tubercular glands of the neck. Damoscowski[3] traces the tubercular virus through the tonsil to the connective tissue lymph vessels between the follicles of the lymph glands that surround the large blood vessels of the neck. And lastly Wood in America and Senes Morehead for the English Tuberculosis Commission, have shown that the tubercle bacillus may pass through the tonsils in the body of a phagocyte and land in the first, but may go to the second or even the third or further down the lines of glands before it establishes itself and infects the gland.

In closing I wish to emphasize 90 per cent. of the tubercular glands in children are due to invasion through the tonsil and that the most dangerous tonsils for

1. Berlin Clinics v. Schr., 1897, xxxiv, 592.
2. Archiv. 1884, xcvi, 319.
3. Beit. z. path. anat. and Allg. Pat., 1891, x, 481.

tubercular infection are the small or buried variety and not the large protruding tonsil.

Dr. Charles M. Jacobs: I believe as Dr. Ridlon does that careful and efficient protective treatment will not only result in a cure of the patient in tuberculous joint disease, but will give a movable joint in the vast majority of cases. After observing the results obtained by surgical procedure, I am more convinced than ever that the best treatment of tuberculous joints is by conservative methods. I do not wish to imply, however, that operative procedure should be abandoned. I believe it to be a useful adjuvant measure, but it should not be the fundamental treatment in children.

In the treatment of tuberculosis of the hip in adult life, excision of the head of the femur assures a rapid cure in early cases and is advisable because the period of disability is of far greater moment than the preservation of motion. But the same operation in a child will involve not only the sacrifice of bone with a crippling deformity in after life, but there is no assurance of a rapid cure. The theory has been advanced that the tubercle bacilli have a special predilection for the red marrow in bone and the synovial membrane in joints. We know that the structure of bone in adults and in children is not the same; that the red marrow is found in the region of the joints in adults, while it is found not only in the region of the joints in children but in the shaft of the long bones as well. Therefore, we can readily understand why an excision of the head of the femur will not insure a rapid cure in children. When we were using bismuth paste so extensively at the Home for Crippled Children some years ago, 40 per cent. of the cases were for tuberculous sinuses resulting from excision of the head of the femur. I should like to hear from Dr. Murphy regarding the theory advanced.

Another important point I wish to emphasize is in reference to the treatment of tuberculous abscesses. It is thought that opening a cold abscess is a good method of treatment, but a difference of opinion exists on this subject. We know that, if abscesses were left alone they would disappear without any treatment, at least in 20 per cent. of the cases, and that this percentage could be increased by the "rest" treatment.

Dr. Ridlon has mentioned tuberculin. At the Home for Crippled Children we selected twenty-four cases of tuberculous joints as much alike as possible. Twelve of them were given tuberculin for nine months, and at the end of that time those patients who had been given tuberculin did not show any greater improvement than those treated without tuberculin.

Dr. William Cuthbertson: Dr. Murphy has drawn and described a most beautiful picture of tuberculosis of the Fallopian tube, that portion of the female genitalia which is most infected by this disease. He also ascribes this infection in many instances to an ascending process. It would seem from the prevalence of tuberculosis of the epididymis that it would naturally follow that the female genitalia would be infected through coitus. The conclusions which Pope has come to from his researches in tuberculosis of the female genitalia, together with the statistics quoted by Dr. Lewis, go to show only a small portion of the cases result from coitus. On the other hand, other investigators have shown that tuberculous endometritis results very often after childbirth and labor, hence we can account for seeing a great many cases which are infected during childbirth or are infected during labor.

Dr. Bevan has spoken of the favorable results of resection of the epididymis in tuberculous epididymitis, and has referred to the similarity between tuberculous epididymitis and tuberculosis of the Fallopian tube.

Dr. Lewis referred to the rarity of involvement of the uterus, the vagina and vulva in the tuberculous process.

The infections of the vulva can be readily treated by the *x*-ray, by excision and by hygienic treatment. Where the vagina is involved it is much more difficult. Superficial ulcerations can be readily excised, and the patient treated with tuberculin, or given this combined with hygienic treatment; but very often this process goes from bad to worse and results in a fistula forming between the bladder and vagina. Tuberculosis of the Fallopian tube is a very difficult thing to

diagnose. Unless the process is far advanced, or unless it has occurred in markedly tuberculous people, it is not an easy thing to diagnose it. The diagnosis is frequently made after opening the abdomen in women who present no gross evidences of tuberculosis; hence I maintain the same position in regard to tuberculosis of the Fallopian tube that Dr. Bevan does with reference to tuberculous epididymitis, and that is, where we have the abdomen open and we see the Fallopian tube involved, and before any great extension of the tuberculous process has occurred, we should resect that portion which is palpably infected and combine this with hygienic treatment, thus giving the patient the best chance for a permanent recovery.

Stoeckels of Marburg goes so far as to say that where there is extensive involvement of the uterus, adnexa, and vagina, the Wertheim operation should be practiced and total removal of all these structures made.

Dr. G. Frank Lydston: Some interesting points have been brought out this evening in connection with the various forms of tuberculosis of the genitourinary tract. One point brought out by Dr. Bevan in particular was exceedingly interesting to me, namely, the use of coli vaccine in addition to tuberculin in the treatment of tuberculosis of the urinary tract.

It is proverbial among genitourinary surgeons that the use of tuberculin is not so promising in this particular field as it is elsewhere. I was considerably puzzled to explain this, and finally, purely by accident, I stumbled on the fact that genitourinary tuberculosis is often complicated by colon bacillus infection. This probably will explain why some of the cases have been so unpromising under the use of tuberculin. I find now, bearing this complicating infection in mind, that by the use of coli vaccine in addition to tuberculin, I get much better results. I have a number of cases under treatment that are doing splendidly.

With reference to the frequency of prostatic tuberculosis, it is rare. I agree with Dr. Bevan that when we can find a case where the tuberculous process is limited, an early operation should be performed, but I do not know exactly how we can make an early diagnosis of such cases. I know of no method of makinig an early diagnosis in this type of cases. In by far the majority of cases the prostate is involved secondarily to the bladder, and the seminal vesicles are also implicated. Not infrequently the testicle and vas deferens are involved, and I cannot see the sense of operating on a case of that kind. Healing very rarely takes place; a fistula is left. Possibly the only excuse for operation would be drainage. As for complete extirpation of the tuberculous area, I think that is not only impracticable but it is foolish to attempt it.

There are a great many cases of chronic prostatitis in which the prostate feels nodular to the exploring finger in the rectum, and they are passed along as tuberculosis of the prostate. I remember that one of my distinguished confrères in the city some years ago practically said that a nodular condition of the prostate really meant tuberculosis, to which I replied, that if it was tubercular, it was not only very frequent, but was not a very serious condition.

With reference to operating on the tubercular testis, I believe that, inasmuch as the testicle is readily accessible, the tubercular foci in the testis, one or both, should be removed. In early cases in which the diagnosis cannot be established satisfactorily, unless the patient will consent to have the epididymis resected on suspicion, the vas should be resected to cut off the avenue of infection to the seminal vesicles, prostate and bladder.

I believe that gonorrhea bears a distinct relation to tuberculosis of the epididymis. In certain cases apparently the epididymis, which has been involved in a chronic gonorrheal inflammation, becomes involved in a tubercular infection. This may be a mere coincidence, but it has occurred so frequently in my experience that I think it is safe to infer that in some cases the sequence is clear.

With reference to obliteration of the ureter in tuberculosis of the kidney, not only is the ureter obliterated in very many cases, but the blood vessels also. It has been my experience in removing a tubercular kidney, which was far advanced and reduced to a pus sac, to have the entire remnant of the kidney come away, much to my consternation, and to find my concern was absolutely unneces-

sary because no hemorrhage followed. The late Dr. Alexander Hugh Ferguson called attention to several similar cases that had occurred in his own experience, but I do not know whether he called them tubercular or not.

I believe with Dr. Bevan that ascending infection on the opposite side from the tubercular kidney and the tubercular ureteral orifice is rare. It is more likely to occur where injudicious and rough catheterization of the ureters is practiced. With a perfectly normal ureteral orifice on the opposite side, the diagnosis having been established by the presence of tubercle bacilli in the urine, the use of tuberculin and the cystoscope, I can see very few indications for catheterization of the opposite ureter. When, however, it comes to the question of operating on the diseased kidney, catheterization is necessary to differeniate the urines and determine whether the sound kidney or supposedly sound kidney is capable of carrying on the renal function.

With reference to the bladder lesion healing after nephrectomy, when the kidney is removed early, my experience has been that the bladder lesion, unless it is extensive—and it is not extensive as a rule—heals. It would seem that the bladder is relatively insusceptible to tubercular infection as compared with the kidney.

I would like to ask Dr. Bevan whether in his own cases and those of Dr. Schmidt in which the bacilli in the urine persisted after apparent cure of the tuberculosis, the tuberculosis was primary or secondary.

Dr. Bevan: Secondary. I do not believe there is such a thing as primary tuberculosis of the bladder.

Dr. Lydston (resuming): I am glad Dr. Bevan answered the question, because I could not see why he and Dr. Schmidt should be surprised that tubercle bacilli should persist if the cases were secondary.

With reference to the treatment of tuberculosis of the bladder, I agree with Dr. Bevan, who stated that rest is absolutely essential. These cases are very often benefited by suprapubic section and drainage for a prolonged period, and when this is combined with a change of climate and with the ordinary general measures for the treatment of tuberculosis, a palliative operation is very satisfactory, and in some instances apparently a cure results. I have seen that occur.

With reference to operating on the seminal vesicles, I cannot conceive of any reason why the seminal vesicles that are invaded by the tuberculous process should be operated upon. The seminal vesicles have been operated on very much more frequently than they should have been. It is a brilliant thing to have operated on a series of cases of disease of the seminal vesicles, but in the majority of cases such operations are not justifiable. Especially is operation not justifiable in cases of tuberculosis of the seminal vesicles where the prostate and bladder are practically always involved.

With reference to the removal of the testicle in cases in which the organ is broken down, with more or less extensive tubercular abscesses, whether the process be primary or secondary, I believe the removal of the testis is in order. It is astonishing how in some cases pulmonary infiltration will clear up after the removal of the testicle. It is sometimes a difficult thing to determine precisely which is the primary process, the testicular or the pulmonary tuberculosis. I have repeatedly seen pulmonary tuberculosis improve as a consequence of complete removal of the tubercular focus in the testicle. As to whether this was due to improvement in the general condition incidental not only to the removal of the tuberculous focus, but also of a focus of mixed infection, I am not prepared to say, but the sequence of cause and effect has been so frequent in my experience that I feel justified in asserting that the operation should be performed in all cases.

Dr. Isaac A. Abt: In reference to what Dr. Fuller said, it is important to make a clinical differentiation which Dr. Murphy made earlier in the evening of the so-called ulcerative type from the adhesive type, and from the diffuse miliary type, because in the ulcerative type, or in those where there are masses containing tubercular fluid, it is essential to open them to get any results at all.

So far as tuberculosis in children is concerned, we can usually recognize the primary lesion and secondary invasion. In the majority of instances the primary lesion occurs in the lung. It has been found by two observers who have studied a large series of autopsies that in more than 90 per cent. of the cases the lesion is primarily in the lung, and secondly in the glands. They go so far as to say that the primary lesion has occurred in the same lung on the same side where the gland is involved. If there be a primary lesion in the right lung, then one may expect secondary involvement of the mediastinal or bronchial glands on the right side. They make the same point with regard to intestinal involvement. There is a primary lesion of the intestine before there is any involvement of the mesenteric glands.

Dr. William M. Harsha: The papers and discussion have been very illuminating; and have been participated in by men who are well qualified to speak.

I would like to call attention to one point, and that is, how tuberculin is estimated in the various tests for diagnostic purposes. I do not think that point has been referred to, and I should like to hear an expression of opinion from the essayists when they come to make their closing remarks.

As to the treatment of tuberculous troubles in general, it would seem from the discussion here to-night that the trend of opinion is toward the non-operative treatment. It is certainly so in the orthopedic department (of bones and joints), and we have no better treatment in the average case of joint tuberculosis than rest; and speaking of rest, it applies as well to the intestinal, bladder and kidney forms of tuberculosis. It seems like reverting to the principles advocated by Hilton in his notable book, written many years ago, on "Rest and Pain." It shows how we have gone back to that in the way of treatment of various ailments.

In the treatment of joint tuberculosis the Bier method should be emphasized, and immobilization of joints should receive a good deal of attention, but the latter is not made with sufficient thoroughness in most cases.

It has certainly been brought out very clearly this evening that the hygienic and climatic treatment is of the utmost importance in every form of tuberculosis. I believe many cases of kidney tuberculosis will be cured in the same way.

I have under observation at the present time three cases of tuberculosis of the kidney, the disease having existed for ten years or more, and they seem to be free from any symptoms, other than occasionally we find tubercle bacilli in the urine. So that, it seems to me, in many of these forms of genital tuberculosis we may dispense with operation often, excepting in those where we have tuberculosis of the epididymis. I believe those cases should be treated surgically, and also the broken down testicular tubercular abscesses should be thoroughly removed.

As to tuberculosis of the intestine, I think the treatment consists in securing rest for that portion of the intestine which is diseased, where possible by the methods advised here this evening, and the general hygiene and dietetic management.

Dr. Frederick Cleveland Test: I cannot allow the statements that have been made to-night in regard to the usefulness of tuberculin in cases of bone tuberculosis to go unchallenged, because I feel that they are not in accordance with the facts.

Tuberculin has been found to be efficient in other forms of tuberculosis, and it is effective in bone tuberculosis. I think the crux of the matter is simply this, that the proper tuberculin has not been used.

Bone tuberculosis, as I find it principally in children, in 75 per cent. of the cases is of the bovine type, and when treated with bovine tuberculin you will get results.

In the papers of the orthopedic men I have looked over, there seems to be no mention of any attempt at differentiation of the kind of infection present. In other forms of bacterial infection effort is promptly made to determine the identity of the infecting organism, so that proper, specific treatment may be given. You would not treat an erysipelas infection haphazard, with any streptococcus vaccine, as that of *pyogenes* or *conglomeratus*, but would use the vaccine of *longus*, and expect to get results. The same principle applies to tuberculous infec-

tion, though I recognize the fact that some degree of immunization is ordinarily obtained, through treatment with any form of tuberculin. One line of treatment is general, and the other specific, and so, for that reason, when you treat bone tuberculosis with the proper tuberculin, that of the infecting type, you will get the desired results in the larger number of cases.

Mention was made of one series of cases in which tuberculin, type not named, had been given to patients for nine months, and then abandoned as useless. Why, what would be said of the surgeon who put joints up in a plaster cast or used braces for this brief length of time, and then stopped, saying that this was all that could be done for the patient. Patients are entitled to tuberculin treatment not only for nine months, but two, or three or even four times nine months if necessary, and then compare with those who have not had tuberculin, or the proper tuberculin and the greater improvement will speak for itself.

Dr. John B. Murphy (closing the discussion on his part): It seems to me, that in the discussion we have drifted almost entirely to the treatment rather than adhering to the pathologic conditions which are to be treated. It is not so much the tuberculosis *per se* as it is the degree of destruction that has been produced in the organ involved compared with the natural reparative and resisting power of that tissue.

Tuberculous adenitis in adults will go on to repair with appropriate treatment, but it is the degree of destruction which controls the amount of work that has to be done to reconstruct the tissues and develop resistance; therefore, the only way by which we can make an estimate of what is really expected to be accomplished and what can be accomplished is by analyzing the degree of destruction that has taken place.

With reference to the remarks made by Dr. Fuller as to tuberculous peritonitis we may compare the peritoneal destruction to that caused by burns in any part of the body. When we have a burn of the first degree it is possible to secure a full restoration of tissue. We all know that. If we have a burn of the second degree, we have a reparative scar. If we have a burn of the third degree, we have cicatrization, contraction and possibly continued ulceration always with permanent tissue depths. In the repair of tuberculosis in the catarrhal type of peritonitis there is no destruction but a metaplasia of the endothelial cells, which is capable of complete restoration, and one would find in that type, if he reopened the abdomen at the end of six months for some other condition, a perfectly normal peritoneum. Exactly the opposite is true when we have the third degree of destruction. When the endothelial cells have been destroyed we have permanent firm organic adhesions, and when separated the surface must be covered by a peritoneoplasty to prevent adhesions. Another example: if we have a plastic cobweb exudative variety of synovitis, properly handled and treated, we can bring about full restoration; the surface again covers with endothelial cells, and a perfectly movable joint results. It is of the utmost importance in describing a treatment and what one expects to obtain thereby to state definitely whether he has a superficial exudative variety, with the transudation of fluid into the peritoneal cavity to deal with; whether he has the cobweb variety, which has altered the endothelial cells, but not beyond the power of restoration, or whether he has entire destruction of the endothelial cells, and basement membrane where nothing but connective tissue formation and adhesions must finally result. That is the reason for making the differentiation. It is well to keep that clearly in mind in making an estimate of what can and what should be done. If a man says that he can bring about complete restoration in this last named variety, he is stating an untruth, as *restoratio ad integram* is impossible. It is not within the range of surgery to do so whether you give tuberculin or not. If we administer tuberculin properly in the other varieties, the case goes on to recovery. We have, therefore, three distinct varieties of the same affection. Yes, but not capable of being restored in the same way nor with the same final results.

Concerning Dr. Jacobs' question why tuberculosis occurs in the shafts of bone in children, we start out with the primary statement, that up to the period

of ossification we never have primary tuberculosis in the epiphysis. Why? Because cartilaginous tissues are never primarily attacked by tubercle bacilli. In the adult we never have primary tuberculosis in the shaft; it is always on the joint side of the epiphyseal line. In children we have osseous tuberculosis occurring in the shaft, where the bone is denser; this type demands immediate operation for its relief. A large portion of the shaft, all of its diseased area, should be removed as early as diagnosed. We can take out two, four, six or ten inches of the tibia or femur and by preserving its periosteum have a complete and perfect restoration of these bones, as has been demonstrated by Mr. Stiles of Edinburgh. Where the femur is removed, in order that deviations or shortening may not occur, I transplant a portion of the crest of the patient's tibia sufficiently large to fill up the gap and contact above and below with the retained bony segments. By this means one insures (a) complete restoration, (b) absence of shortening, (c) no change of conformation. When tuberculosis occurs in the knee of a child it is a primary synovial tuberculosis and has an entirely different process in repair.

In considering the degree of potency of serous membrane repairs in tuberculosis, we classify them in the following order: first, the best repair is by the peritoneum: second, by the pleura; third, by the synovial membrane, and fourth, by the meninges. Each of these has its individual potency in the repair of tuberculosis and it is that power of repair that we assist by treatment to restoration, which governs the final result obtained in the cure.

In analyzing tuberculosis of any tissue there is no better means than the one advised by us many years ago, of using as an analogue the destruction and repair of lupus.

Ask the question: if it were a lupus of this tissue, what would happen? It has been shown that tuberculosis is healed by encapsulation or exfoliation. The tuberculous process is either encapsulated, becomes inert, or remains latent for a number of years, and then can break out anew; or it is exfoliated and thrown off from the surface. That is the way lupus heals, and that is the way tuberculosis heals.

Tuberculosis of the uterus is a much more common lesion than is generally supposed. It occurs quite frequently in young women. I have observed this when these patients are referred to me for surgical treatment of menorrhagia. A large percentage of these cases give a positive response to the tuberculin test. Tuberculin treatment is at once instituted and gives us much more satisfactory results than curettement or any other line of treatment with which I am familiar. It is most gratifying to see the quantity of flow diminish, the interval between increase, the gain in weight and physical appearance and in a few months to see the complete recovery. The test dose we use in the average case, not in the severe one, is five minims of dilution number two of Lucius & Bruening's preparation of Koch's old tuberculin. Now we use the hypodermic test exclusively. I have seen ill effects from the ophthalmic test, but not from the other.

If it is bone tuberculosis in a child, which is even much more common than Dr. Jacobs has mentioned, the bovine type of tuberculous vaccine should be used for test and if positive for treatment. Otherwise in all cases of tuberculosis we use human tuberculin, which we have demonstrated has a positive and valuable place in the treatment of tuberculous lesions of bones if properly administered. Furthermore, we believe that there is no agent that can be more abused and cause greater destruction when one thinks he is doing good than tuberculin. We believe that it is more difficult to learn the dosage of this drug than any other agent we have ever used, and it is because of this difficulty, together with the failure to interpret the proper effect of the dose, that such great diversity of opinion has arisen as to its value.

Dr. Arthur Dean Bevan (closing the discussion on his part): With reference to the tuberculin test, I would not give thirty cents for tuberculin as a diagnostic means in determining whether or not a given case is one of surgical tuberculosis. When you realize that von Pirquet, who has worked over the matter so carefully, tells us that 90 per cent. of adults react to his test, and when the evidence shows that 50 per cent. or more of children over 10 react to it, we must realize

that in the tuberculin test we have the possibility of enormous error. I have come to the conclusion that in surgical tuberculosis it is absolutely of no value when you realize in a series of marked cases of tuberculosis you frequently obtain no reaction at all. I am rather inclined to believe that when we weigh the evidence in a given case of surgical tuberculosis, or in a supposed case of surgical tuberculosis, we must not give the tuberculin test much credit, nor rely upon it on determining the diagnosis. I simply make that statement because in my work on surgical tuberculosis I do not use tuberculin as a diagnostic aid. We are convinced that we obtain no assistance from it. I will go a step out of our way and say this also with regard to the Wassermann test, that we have recently operated on a number of cases where the Wassermann test was misleading, two cases of brain tumor, with absolute positive Wassermanns. These patients were operated on at the urgent request of the neurologist, and the operation disclosed no syphilis but in one case a glioma, and in the other an endothelioma. We have comparatively recently had five cases of carcinoma of the mouth and tongue, with very positive Wassermanns. These patients had been given salvarsan, K.I., and mercury hypodermatically for long periods of time, and a section taken in a minute with a little cocain or novocain and put under the microscope showed unmistakable epithelioma.

There is one thing you have got to do in practicing medicine, and that is to get down to absolute facts. As clinicians we often attach too much value and place too much importance on some laboratory tests, and in saying this I do not wish to be understood as decrying laboratory tests nor laboratory work, because I have a laboratory of my own, and it is most instructive, but when you come down to the clinical facts of surgical tuberculosis, do not rely too much on the tuberculin test. When it comes down to supposed syphilis, do not rely too much on the Wassermann test.

Dr. Lydston: I would like to know by what process of reasoning you conclude, Dr. Bevan, that glioma of the brain or epithelioma of the tongue insures the patient against not having syphilis, although the Wassermann test is positive.

Dr. Bevan: The problem put before us was to determine in each one of the cases whether or not we had to deal with a syphilitic or some other lesion. In the two cases of tumor of the brain the patients had been handled very freely with salvarsan, were given K. I. and mercury, and after the Wassermann test was made it was suggested to crowd the K. I. again to the limit, relying upon the Wassermann test. The neurological consultant believed in spite of the positive Wassermann that operations should be done, and they were done, and showed not syphilis but tumor.

One of the tongue cases was very pitiful. The woman denied absolutely that she had ever had syphilis; her husband denied syphilis; she had borne healthy children, and her husband denied having intercourse with anybody except his wife. A Wassermann test was made and was positive, and for three or four months in spite of her protests and mental suffering she was put on K. I., on mercury, and salvarsan, and during all that time the process extended. She died of carcinoma of the tongue, even after operation was made, from a rapid recurrence. In determining what the surgical lesion really is in a given case, I do not think we should rely too much either on the Wassermann test or an tuberculin.

Dr. Henry F. Lewis (closing the discussion): There was one point brought out by Dr. Murphy in connection with tuberculosis of the uterus which I did not clearly understand. I would like to know whether in these cases of menorrhagia in young women or almost children the diagnosis of tuberculosis was made absolutely or simply suspected?

Dr. Murphy: Suspected.

Dr. Lewis: The diagnosis was not made by finding tubercle bacilli?

Dr. Murphy: No.

Dr. Lewis: The menstrual function is an extremely complicated one and is influenced by nervous troubles, and we have also known for a long time that one of the early symptoms of tuberculosis of the lungs is menorrhagia. Therefore we cannot conclude that, because menorrhagia ceased under tuberculin treatment, the tuberculosis was necessarily in the uterus.

A STUDY OF THE MORTALITY OF APPENDICITIS*

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While the literature on appendicitis is almost endless and while I have nothing new to present in diagnosis or treatment, yet an investigation of the mortality of appendicitis warrants the adding of my name to the already long list of contributors to this subject, with the hope that it may convert a few to deeper thinking and the application of more care in diagnosis.

In my investigation of reports covering 20,670 deaths (including simple peritonitis because of the fallacy of this diagnosis) as shown in the accompanying table, there were 11,144 due to appendicitis and 9,526 in which simple peritonitis was given as the cause of death.

In 5,167 deaths due to appendicitis in which the sex was given, 3,081 were males and 2,086 females, or 59.62 per cent. and 40.38 per cent., respectively. Of 5,389 cases of simple peritonitis there were 2,260 males and 3,129 females, or 41.93 per cent., as compared to 58.07 per cent. in females, or a reverse in percentages.

In 5,284 cases of appendicitis the ages were as follows:

1- 5.... 193	20-30....1,092	50-60....367
5-10.... 457	30-40.... 750	60-70....224
10-20....1,454	40-50.... 590	70 +....157

While the above figures show appendicitis to be a disease of all ages, yet it proves conclusively that a very large percentage occurs during young active life and also warns us of the frequency of appendicitis in children.

In 5,227 cases of simple peritonitis in which the ages were given, it was found to be as follows:

1- 5....574	20-30....959	50-60....520
5-10....299	30-40....901	60-70....403
10-20....589	40-50....624	70 +....358

In these the age was found to coincide very closely to that of appendicitis, except in early life. Over fifty per cent. having occurred during the period of life in which the female productive organs are most active, a statement can be made with little hesitation that the cause of death in many of these cases resulted from an infection of the appendix in the male and in the female either as an appendiceal or tubal involvement, owing to frequency of ascending infection in the latter sex.

Another feature of this investigation worthy of one's notice is the city death rate of these conditions as compared to the rural districts. In the city of Boston only 680 deaths of appendicitis occurred during a

* Read before the Chicago Medical Society, Dec. 6, 1911.

Cause	Year	State	City	Sex		Age 1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+	Deaths, Spec. Cause	Deaths, All Causes	Population State
Appendicitis	1900	Mass.	Boston..	M.	168	1	13	14	29	47	27	17	13	5	2	243	51,156	2,805,346
			670,585	F.	75	2	9	11	11	8	11	9	7	3	4			
Simple peritonitis..	1900	Mass.	88 ..	M.	222	39	14	10	12	40	24	28	23	13	19	541	51,156	2,805,346
			..	F.	319	26	13	11	14	88	80	28	21	22	16			
Appendicitis	1901	Mass.	Boston..	M.	143	1	13	17	26	22	32	16	8	4	4	234	48,275	2,805,346
			90	F.	91	4	10	13	10	18	13	9	5	5	4			
Simple peritonitis..	1901	Mass.	..	M.	221	28	11	18	11	41	21	29	20	26	16	537	48,275	2,805,346
			..	F.	316	33	23	11	10	58	54	43	34	26	24			
Appendicitis	1902	Mass.	Boston..	M.	137	4	6	16	16	42	16	18	9	9	4	242	47,491	2,805,346
			88	F.	105	2	12	9	11	22	13	10	14	6	3			
Simple peritonitis..	1902	Mass.	..	M.	164	25	14	11	8	23	23	20	14	15	11	439	47,491	2,805,346
			..	F.	275	20	15	10	9	54	55	33	25	29	25			
Appendicitis	1903	Mass.	Boston..	M.	161	6	12	18	18	43	28	17	13	3	3	248	49,054	2,805,346
			72	F.	87	4	14	13	7	16	16	6	2	4	5			
Simple peritonitis..	1903	Mass.	..	M.	195	26	13	16	13	24	20	27	27	15	14	453	49,054	2,805,346
			..	F.	258	18	11	7	14	59	53	33	18	25	20			
Appendicitis	1904	Mass.	Boston..	M.	144	9	9	16	22	35	16	22	6	3	6	243	48,482	2,805,346
			49	F.	99	1	9	13	14	17	14	14	9	5	3			
Simple peritonitis..	1904	Mass.	..	M.	180	27	11	10	19	17	24	22	21	17	12	420	48,482	2,805,346
			..	F.	240	12	10	10	10	52	56	42	14	22	12			
Appendicitis	1905	Mass.	Boston..	M.	157	3	12	17	21	31	24	26	10	9	4	264	50,486	3,003,680
			85	F.	107	4	16	13	11	16	11	13	14	4	5			
Simple peritonitis..	1905	Mass.	..	M.	184	34	17	11	4	22	22	21	32	11	10	446	50,486	3,003,680
			..	F.	262	18	16	6	17	57	64	30	14	21	19			
Appendicitis	1906	Mass.	Boston..	M.	139	3	10	13	17	24	15	22	12	16	7	248	50,624	3,003,680
			72	F.	109	3	10	14	13	19	13	19	8	7	3			
Simple peritonitis..	1906	Mass.	..	M.	162	23	14	10	9	30	24	16	17	9	10	358	50,624	3,003,680
			..	F.	196	22	10	3	10	42	37	29	21	15	7			
Appendicitis	1907	Mass.	Boston..	M.	148	5	13	10	19	23	34	14	15	11	4	254	54,234	3,003,680
			79	F.	106	6	10	10	17	12	15	15	10	4	7			
Simple peritonitis..	1907	Mass.	..	M.	191	40	10	18	13	21	26	18	18	14	13	413	54,234	3,003,680
			..	F.	222	12	11	8	12	54	40	25	20	11	16			
Appendicitis	1908	Mass.	Boston..	M.	125	7	5	6	19	29	15	18	17	8	1	216	51,788	3,003,680
			57	F.	91	3	12	9	10	15	17	12	7	4	2			
Simple peritonitis..	1908	Mass.	..	M.	181	33	12	9	21	21	27	21	17	13	7	400	51,788	3,003,680
			..	F.	219	19	16	10	10	45	37	29	27	12	14			
Total appendicitis	9 yrs.	Mass.	Boston..	M.	1,322	39	93	127	187	296	207	170	103	68	35	2,192	451,590	36,041,450
			680	F.	870	29	102	105	104	143	123	107	76	42	36			
Total peritonitis..	9 yrs.	Mass.	..	M.	1,700	275	116	113	110	249	211	202	189	133	112	4,007		
			..	F.	2,307	180	125	76	106	509	476	264	194	183	153			

Cause	Year	State	City	Sex		Age 1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+	Deaths, Spec. Cause	Deaths, All Causes	Population State
Appendicitis.....	1902	N. H.	Concord.	M.	18	...	1	3	8	3	1	1	...	1	...	28	6,649	411,588
			0	F.	10	1	...	2	2	3	1	...	1	...	...			
Simple peritonitis..	1902	N. H.	Concord.	M.	23	3	...	3	1	4	1	...	4	3	4	54	6,649	411,588
			1	F.	31	3	...	1	3	8	4	6	1	2	3			
Appendicitis.....	1903	N. H.	Concord.	M.	10	1	1	2	1	3	...	...	...	1	1	21	6,969	411,588
			1	F.	11	2	1	1	3	1	...	2	1	...	...			
Simple peritonitis..	1903	N. H.	Concord.	M.	24	1	1	2	1	2	3	4	6	2	2	79	6,969	411,588
			0	F.	55	1	3	2	3	4	15	6	8	6	6			
Appendicitis.....	1904	N. H.	Concord.	M.	11	...	1	2	1	1	1	1	1	3	...	29	6,804	411,588
			0	F.	18	1	1	5	3	4	3	...	...	1	...			
Simple peritonitis..	1904	N. H.	Concord.	M.	19	3	...	...	1	3	3	3	4	2	...	64	6,804	411,588
			3	F.	45	3	3	1	3	9	8	4	7	3	4			
Appendicitis	1905	N. H.	Concord.	M.	13	...	...	2	2	2	2	...	1	2	2	19	7,339	411,588
			2	F.	6	...	1	...	2	...	1	...	...	1	1			
Simple peritonitis..	1905	N. H.	Concord.	M.	34	3	1	3	2	5	4	5	5	3	3	82	7,339	411,588
			1	F.	48	2	2	4	2	8	8	5	8	5	4			
Appendicitis	1906	N. H.	Concord.	M.	20	...	1	...	1	5	6	1	1	2	3	34	7,498	411,588
			3	F.	14	2	2	2	1	3	1	...	1	2	...			
Simple peritonitis..	1906	N. H.	Concord.	M.	30	1	...	...	4	...	6	3	7	3	6	80	7,498	411,588
			1	F.	50	2	...	4	1	2	10	11	5	7	8			
Appendicitis	1907	N. H.	Concord.	M.	22	1	1	...	5	6	2	6	...	...	1	30	7,486	411,588
			0	F.	8	...	1	1	3	1	1	1	...	...	...			
Simple peritonitis..	1907	N. H.	Concord.	M.	31	5	2	3	1	5	4	3	1	3	4	66	7,486	411,588
			4	F.	35	2	2	1	1	7	10	4	...	4	4			
Total appendicitis	6 yrs.	N. H.	Concord.	M.	94	2	5	9	18	20	12	9	3	9	7			
			6	F.	67	6	6	11	14	12	7	3	3	4	1	161	42,745	2,469,528
Total peritonitis..	6 yrs.	N. H.	Concord.	M.	162	16	5	11	10	19	21	18	27	16	19	425		
			10	F.	263	13	10	13	13	38	55	36	29	27	29			

Cause	Year	State	City	Sex		Age 1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+	Deaths, Spec. Cause	Deaths, All Causes	Population State
Appendicitis	1904	Conn.	98,915 Hartford	M.	45	5	2	26	20	13	11	4	2	1	1	85	15,711	973,177
			16	F.	40													
Simple peritonitis..	1904	Conn.	Hartford	M.	30	11	3	9	12	16	11	13	7	1	0	83	15,711	973,177
			11	F.	53													
Appendicitis	1905	Conn.	Hartford	M.	75	4	10	31	24	24	11	6	6	3	0	119	16,298	1,005,854
			24	F.	44													
Simple peritonitis..	1905	Conn.	Hartford	M.	25	12	5	12	13	7	4	2	12	1	1	69	16,298	1,005,854
			10	F.	44													
Appendicitis.....	1906	Conn.	Hartford	M.	65	4	14	29	23	17	7	10	5	1	0	110	16,776	1,005,854
			15	F.	45													
Simple peritonitis..	1906	Conn.	Hartford	M.	21	10	2	7	9	10	6	5	6	3	0	58	16,776	1,005,854
			4	F.	37													
Appendicitis	1907	Conn.	Hartford	M.	62	2	10	20	12	15	20	9	5	3	...	96	17,490	1,005,854
			22	F.	34													
Simple peritonitis..	1907	Conn.	Hartford	M.	22	6	2	6	7	4	10	10	2	4	2	53	17,490	1,005,854
			6	F.	31													
Appendicitis	1908	Conn.	Hartford	M.	49	1	7	18	19	14	12	7	4	1	...	84	16,000	1,005,854
			9	F.	35													
Simple peritonitis..	1908	Conn.	Hartford	M.	10	2	2	7	2	3	5	4	3	2	2	32	16,000	1,005,854
			4	F.	22													
Total appendicitis	5 yrs.	Conn.	Hartford	M.	296	16	43	124	98	83	61	36	22	9	1	494	82,275	4,996,593
			86	F.	198													
Total peritonitis..	5 yrs.	Conn.	Hartford	M.	108	41	14	41	43	40	36	34	30	11	5	295		
			35	F.	187													
Appendicitis	1907	Illinois	2,185,283 Chicago.	M.	326	26	49	74	69	139	79	60	42	19	11	568	62,854	5,519,279
			330	F.	242													
Simple peritonitis..	1907	Illinois	Chicago.	M.	78	15	9	9	13	38	28	19	14	9	11	175	62,854	5,519,279
			39	F.	97													
Appendicitis	1908	Illinois	Chicago.	M.	331	26	52	75	83	117	98	75	39	19	12	596	60,445	5,608,304
			363	F.	265													
Simple peritonitis..	1908	Illinois	Chicago.	M.	84	15	13	13	14	30	35	25	19	11	22	197	60,445	5,608,304
			21	F.	113													

Cause	Year	State	City	Sex		Age										Deaths, Spec. Cause	Deaths, All Causes	Population State
						1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+			
Appendicitis	2 yrs.	Illinois	Chicago.	M.	657	52	101	149	152	256	177	135	81	38	23	1,164		
			692	F.	507												123,299	11,127,583
Simple peritonitis..	2 yrs.	Illinois	Chicago.	M.	162	30	22	22	27	68	63	44	33	20	33	372		
			60	F.	210													
Appendicitis	1899	Maine	..	M.	21	0	3	15		8	2	1	1	4	3	37	.....	.....
			..	F.	16													
Appendicitis	1900	Maine	..	M.	25	2	5	10		9	9	6	0	1	4	46	.....	.....
			..	F.	21													
Appendicitis	1901	Maine	..	M.	27	0	5	10		7	2	1	5	4	5	39	.....	.....
			..	F.	12													
Appendicitis.....	1902	Maine	..	M.	38	1	7	16		14	8	9	4	2	1	62	.....	.....
			..	F.	24													
Appendicitis.....	1903	Maine	..	M.	43	5	13	22		15	11	4	1	4	4	79	.....	.....
			..	F.	36													
Appendicitis.....	1904	Maine	..	M.	52	7	4	24		9	9	12	8	5	3	81	.....	.....
			..	F.	29													
Appendicitis.....	1905	Maine	..	M.	32	5	5	19		16	7	6	5	3	2	68	.....	.....
			..	F.	36													
Appendicitis	1906	Maine	..	M.	48	6	6	26		11	8	4	7	5	2	75	.....	.....
			..	F.	27													
Appendicitis	1907	Maine	..	M.	39	3	4	26		9	6	10	6	2	5	71	.....	.....
			..	F.	32													
Appendicitis	1908	Maine	..	M.	27	3	7	16		8	6	5	4	2	5	56	.....	.....
			..	F.	29													
Appendicitis	90–08	Maine	..	M.	352	32	59	184		106	68	58	41	32	34	614	.....	.....
			..	F.	262													
Appendicitis	1905	Colo.	..	..	...	1	13	32		38	18	19	2	3	4	130	9,079	602,925
Simple peritonitis..	1905	Colo.	..	..	...	4	4	9		13	12	9	5	2	2	60	9,079	602,925
Appendicitis	1906	Colo.	..	..	...	5	11	32		25	22	13	9	3	4	124	9,805	615,570
Simple peritonitis..	1906	Colo.	..	..	...	7	0	7		9	13	12	8	7	2	65	9,805	615,570
Appendicitis	1907	Colo.	..	..	...	0	6	27		33	15	10	6	1	2	100	11,093	628,616
Simple peritonitis..	1907	Colo.	..	..	...	4	3	4		9	8	5	2	3	2	40	11,093	628,616
Appendicitis	1908	Colo.	..	..	...	5	6	31		21	16	17	6	5	4	111	10,911	640,861
Simple peritonitis..	1908	Colo.	..	..	...	4	0	4		5	6	5	3	1	1	29	10,911	640,861
Appendicitis	05–08	Colo.	..	..	...	11	36	122		117	71	59	23	12	14	465	40,888	2,487,972
Simple peritonitis..	05–08	Colo.	..	..	...	19	7	24		36	39	31	18	13	7	194	40,888	2,487,972

Cause	Year	State	City	Sex		Age										Deaths, Spec. Cause	Deaths, All Causes	Population State
						1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+			
Appendicitis	1907	Cal.	..	M.	165	8	41				183			5	0	237	31,095	2,001,193
			..	F.	72													
Simple peritonitis..	1907	Cal.	..	M.	85	8	15				128			25	0	171	31,095	2,001,193
			..	F.	86													
Appendicitis	1903	Rural Md.	Baltimore	M.	14	0	2	4	1	4	3	3	1	1	1	20	.....	.....
			..	F.	6													
Appendicitis	1904	Rural Md.	Baltimore	M.	21	2	3	3	8	5	3	2	1	1	0	28	.....	.....
			..	F.	7													
Appendicitis	1905	Rural Md.	Baltimore	M.	11	2	0	1	2	4	3	1	3	1	1	18	.....	.....
			..	F.	7													
Appendicitis	1906	Rural Md.	Baltimore	M.	21	1	3	8	5	7	4	0	2	3	0	33	.....	.....
			..	F.	12													
Appendicitis	1907	Rural Md.	Baltimore	M.	17	0	3	5	3	5	3	3	3	2	0	27	.....	.....
			..	F.	10													
Appendicitis	1908	Rural Md.	Baltimore	M.	23	1	1	1	0	5	7	4	5	2	4	30	.....	.....
			..	F.	16													
Appendicitis	03–08	Rural Md.	Baltimore	M.	107	6	12	22	28	30	23	13	15	10	6	165	.....	.....
			..	F.	58													
Appendicitis	1908	Oregon	..	M.	33	4	7		5		12		5		0	51	4,970	.....
			..	F.	18	0	3		5		7		2		1			
Simple peritonitis..	1908	Oregon	..	M.	16	1	1		2		7		1		4	53	4,970	.....
			..	F.	37	2	6		4		20		3		2			
Appendicitis	1906	La.	..	M.	29											47	6,819	341,000
			..	F.	18													
Simple peritonitis..	1906	La.	..	M.	10											29	6,819	341,000
			..	F.	19													
Appendicitis	1907	La.	..	M.	26											42	7,633	341,000
			..	F.	16													
Simple peritonitis..	1907	La.	..	M.	17											37	7,633	341,000
			..	F.	20													
Appendicitis	06–07	La.	..	M.	55											89	14,452	682,000
			..	F.	34													
Simple peritonitis..	06–07	La.	..	M.	27											66	14,452	682,000
			..	F.	39													

Cause	Year	State	City	Sex		Age										Deaths, Spec. Cause	Deaths, All Causes	Population State
						1/5	5/10	10/15	15/20	20/30	30/40	40/50	50/60	60/70	70/+			
Appendicitis	1907	N. J.	243,205 Jersey City 28	.. ..	.. ..											183	37,408	2,248,331
Simple peritonitis..	1907	N. J.	Jersey City 23	.. ..	.. ..											191	37,408	2,248,331
Appendicitis.....	10–02 9–03	Wash.	..	.. ..	.. ..											55	3,787	.....
Simple peritonitis..	10–02 9–03	Wash.	..	.. ..	.. ..											37	3,787	.....
Appendicitis	10–03 9–04	Wash.	..	.. ..	.. ..											91	4,161	.....
Simple peritonitis..	10–03 9–04	Wash.	..	.. ..	.. ..											65	4,161	.....
Appendicitis	10–04 9–05	Wash.	..	.. ..	.. ..											51	4,173	.....
Simple peritonitis..	10–04 9–05	Wash.	..	.. ..	.. ..											74	4,173	.....
Appendicitis	10–05 9–06	Wash.	..	.. ..	.. ..											44	4,228	.....
Simple peritonitis..	10–05 9–06	Wash.	..	.. ..	.. ..											88	4,228	.....
Appendicitis	10–02 9–06	Wash.	..	.. ..	.. ..											241	16,349	.....
Simple peritonitis..	10–02 9–06	Wash.	..	.. ..	.. ..											264	16,349	.....
Appendicitis	95–09	Vermont	..	..	..											507	.....	.....
Simple peritonitis..	95–09	Vermont	..	..	..											713	.....	.....
Appendicitis	00–09	Indiana	..	..	..											1,824	.....	.....
Simple peritonitis..	00–09	Indiana	..	..	..											2,775	.....	.....
Appendicitis	07–09	N. Y.	..	..	..											2,759	.....	.....

period of nine years as compared to 1,510 in the rural districts and other smaller cities. Concord, N. H., only six deaths in six years, to 155 in other cities and rural districts. Hartford, Conn., eighty-six deaths in five years to 408 deaths outside of that city. In Chicago 693 deaths in two years to 467 deaths outside of Chicago. On the other hand, where peritonitis was given as a cause, only ten deaths occurred in Concord in six years compared to 415 deaths outside of that city. In Hartford thirty-five deaths in five years to 260 deaths in other cities and rural districts of Connecticut. In Chicago and Cook County sixty deaths in two years to 312 deaths outside of Cook County, while the number of deaths in Chicago of appendicitis was approximately 60 per cent. of the total death rate of appendicitis of the state; on the other hand, only 16 per cent. of the reported cases of peritonitis occurred in Cook County.

This contrast of facts may be explained in many ways, chiefly that a very large percentage of cases of appendicitis are taken to the city for operation, many of them in a critical condition as a result of the starvation treatment, for a last resort operation.

While, on the other hand, many cases are not recognized even at the last expiring breath, and go to their graves with the epitaph "died of simple peritonitis," for the want of a better diagnosis.

With the above report of my investigation, which is indeed a serious state of affairs, a discussion of the diagnosis and treatment may be considered at this juncture.

The diagnosis of appendicitis in the great majority of cases is comparatively easy; the fact, however, that some cases offer great difficulty, requires taking into consideration all conditions that may cause confusion and arrive at the diagnosis by exclusion to avoid serious mistakes. A clear picture of the following condition must be kept constantly before us: gastric or duodenal ulcer, ptomain poisoning, or acute gastritis, cholecystitis and cholelithiasis, renal calculus, tubercular kidney, floating kidney, plumbism, intestinal obstruction, tubo-ovarian infections, tubal pregnancy and typhoid fever.

Too much stress cannot be emphasized in taking the history of every case; when properly elicited, if the patient be of moderate intelligence, much valuable information can be obtained that will assist us in arriving at a proper conclusion.

The time, manner of onset, the location, character and radiation of pain, presence or absence of vomiting and its character if present, and does it cease when the stomach is empty, presence or absence of a chill, have similar attacks occurred before, are some of the conditions that should be obtained with every history.

Chill in appendicitis is quite common and a symptom of considerable importance. The pulse and temperature should be carefully noted, and I wish to emphasize the not infrequent subnormal temperature in the very beginning of the attack. The pulse is one of our best guides and should be constantly observed as only a slight increase may mean much. With event of peritonitis we get a more marked increase of the pulse rate, first

full and bounding, later becoming soft and wiry, with a quick receding tension, while the temperature may be subnormal or only slightly elevated.

The pain of appendicitis not infrequently begins in the epigastrium, radiating over the entire abdomen, and is greatly relieved for a short time as soon as the stomach is emptied of its contents, which generally occurs with little effort on the part of the patient; and when once emptied, the vomiting generally ceases. After the stomach has been relieved of its contents we find our pain in the right iliac region in most cases. A sudden disappearance of the pain indicates rupture, thrombosis, gangrene, extension of a localized peritonitis, or rupture of an appendiceal abscess, all of which are extremely grave conditions.

Palpation should be made with the greatest gentleness and care to obtain the best results, as it is by this valuable method we secure our greatest knowledge.

After the abdomen has been carefully outlined and we have located every point of tenderness with the aid of our patient, we should repeat and repeat the same procedure, while at the same time divert the patient's attention through conversation or other means. Superficial and deep palpation should be used, and if need be submerged palpation may be made use of.

The attitude of the patient is of extreme importance. The right limb is not infrequently flexed and should an abscess be formed, or peritonitis lighted up, extension of the limb invariably increases the pain. Tenderness and rigidity over the appendix, limited in their area, are valuable signs in arriving at the diagnosis.

Dr. Morris calls attention to the valuable sign "hypersensitiveness, especially in chronic cases, on deep pressure at the site of the right group of lumbar ganglia situated 4 cm. to the right of the umbilicus, and its importance in distinguishing between appendicitis and diseases of the uterus and adnexa, because in the latter group we expect to find it bilateral." I have found this point of value and demonstrated its correctness.

Thickening and tumor formation about the appendix can often be obtained. Vaginal and rectal examination are of the utmost importance in ruling out tubal and ovarian infections.

Percussion will be found useful if an abscess has formed or obstruction be more or less complete, as it is not infrequent to find a decided tympanitic note in the region of the ileum, which is transformed to a dull note abruptly in the region of the appendix and cecum. A gurgling sound may also be obtained with the above conditions present. Leukocytosis is of considerable importance in determining the condition present; however, we must not forget that the leukocytosis varies according to the resistance or immunity of the particular patient in question, plus the length of time the infection has existed and its virulence. Hence the possibility of a given patient being overwhelmed by the virulence of the infection before the resistance of the individual can fortify himself.

In gastric or duodenal ulcer we frequently find our patient a female between 20 and 30 years of age, with probably a history of chlorosis,

amenorrhea, or some occupation predisposing to this condition. Symptoms of dyspepsia are complained of, eructations are frequent and pain in the epigastrium of the sharp burning character excited by taking food and relieved by vomiting. In case of duodenal ulcer the pain may occur later. Tender points not larger than a quarter just below the ensiform cartilage anteriorly, and at the tenth dorsal vertebra to the left of the spinal column are very significant. Hematemesis of unaltered blood occurs in about 50 per cent. of the cases and is said to be pathognomonic.

Some or all of the above conditions being elicited, associated with the characteristic gastric findings of hyperchlorhydria, etc., combined with a history of recurrent attacks form a picture that cannot be mistaken for any other condition. Ptomain poisoning not infrequently causes considerable confusion with appendicitis, and we should be very cautious in taking the history of the previous diet, including the serving of can preparations or tainted foods. The attack usually comes on within a few hours after eating and is ushered in with epigastric pain, cramplike in character, radiating in all directions; repeated vomiting, uncontrollable diarrhea of very dark, offensive stools; restlessness, not infrequently high temperature, twitching or convulsions in younger children associated with muscular weakness, prostration, sunken eyes and pinched expression.

In infections of the gall-bladder a history of malaria, typhoid fever, amebic dysentery or some infection of the gastro-intestinal tract can usually be obtained. It is not frequent under 40, more common in fleshy female subjects with a history of a previous pregnancy or pregnancies in 90 per cent. of the cases. The attack usually comes on suddenly, especially after indiscretion in diet, with severe pain in the epigastrium and right hypochondriac region, not infrequently radiating toward the back and right shoulder; however, the pain may be found in the region of the appendix. The pain is almost invariably followed by vomiting, which has a greater tendency to recur than in appendicitis, and the contents are always strongly bile-stained and of extremely bitter taste. The patient rolls about in great agony and makes pressure over the epigastrium, while the perspiration flows freely.

Jaundice may develop, although slight in most conditions except in obstruction of the common duct, and should be carefully sought. The temperature usually rises, but is not found in the proper ratio with the pulse, as nearly all like conditions of the liver are associated with a comparatively slow pulse.

Constipation is usually present and on examination of the stools one usually finds them lighter in color, while on the other hand the urine is very dark and contains large amounts of bile. Chills are quite common in gall-bladder diseases as in appendicitis. On palpation the abdomen is distended and rigid. Beginning palpation on the lower right side of the abdomen and gently palpating upward we find the rigidity and tenderness gradually increasing and reaching the maximum at the costal cartilage. The liver is found enlarged and tender, and not infrequently the enlarged and tender gall-bladder can be palpated. Sudden cessation of the attack and a history of recurrence are quite characteristic.

Leukocytosis is not marked except in suppurative cases. The ordinary picture of kidney stone or floating kidney is renal colic, which is of sudden onset, with severe pain in the region of the kidney or just below, and radiating downward along the ureter to the genitalia or inner side of the thigh.

Tenderness of the kidney on pressure is a valuable sign and not infrequently with tuberculosis we find some enlargement. A careful history of the onset, duration and the finding of previous attacks is of importance in arriving at a proper conclusion.

To bear out the common occurrence of mistakes I quote Dr. Bevan as reporting four cases of interval operations for appendicitis on the strength of diagnosis made by competent men. Elimination of kidney affections must be done largely from the urinary findings. Oliguria is present in these conditions in most cases associated with vesical tenesmus. Hematuria is one of the most reliable symptoms obtainable, especially if associated with supposed renal colic. The quantity of blood varies greatly from a few corpuscles found microscopically in a well-centrifuged specimen, to macroscopic appearance. Finding of fragments of calculi, pus, kidney epithelium, albumin and tubercle bacilli are of extreme importance. In floating kidney palpation reveals the freely movable organ and absence of tenderness, while a tubercular kidney is usually fixed, enlarged and tender. In obscure cases the *x*-ray combined with segregation and catheterization of the ureter will clear the diagnosis beyond doubt.

Plumbism or saturnism may simulate appendicitis very closely; however, a careful history should be obtained bearing especially on occupation, as our patient may be a metal worker, bartender or painter. The colic is usually severe, the pain is diffuse, cramplike in character, of increasing severity at the umbilicus, and is relieved by deep pressure. Vomiting is frequently present associated with constipation. Temperature is not elevated, and tremor with loss of muscular power, especially of the extensors, is not uncommon. Encephalopathy may occur. Rapid developing anemia is frequent. The blue line of the gums is of considerable diagnostic importance. But a simple measure of no small value is the painting of the skin with a solution of an alkaline sulphid, which will immediately turn black or gray when coming in contact with the lead that is being eliminated by the skin. This is of the utmost importance because it may be obtained early, even before the common manifestations of the disease.

The potential influence of the symptoms of intestinal obstruction are soon stamped on the features of the patient. The history of an inflammatory condition, the presence of a possibly strangulated hernia, or of a previous operation, associated with a sudden seizure of abdominal pain referred to the region of the inflammatory condition should be aids. The pulse becomes rapid and weak, patient cold and clammy with not infrequently a subnormal temperature.

The abdomen is somewhat flaccid while the tympanitic note ends abruptly; gurgling may be obtained, while constipation is absolute. Vomiting is like that of appendicitis, but soon becomes forceful, containing bile and later fecal matter associated with rapidly developing exhaustion,

giving us a clear picture of obstruction; however, it may be due to appendicitis, and should receive the same treatment.

The use of the stomach-tube may be a valuable aid. There are probably no lesions of the abdominal cavity more difficult to rule out in making a positive diagnosis of appendicitis than those occurring in the pelvic organs.

Here a careful history is of the utmost importance in obtaining the possibility of a gonorrheal infection, puerperal infection, abortion, or the early symptoms of gestation, bearing in mind extra-uterine pregnancy. Knowledge of one or more of the above conditions associated with lower abdominal pain, especially on the right side, calls for a differential diagnosis.

The pain in pelvic lesions is usually more continuous, but not so severe excepting that of extra-uterine pregnancy, which is usually sudden and sharp in character. Vomiting is not frequent in these conditions. The not infrequent bilateral condition, the hyperesthesia spoken of by Morris, the tenderness and rigidity determined by double palpation of the appendiceal and tubal regions, the presence ofttimes of a mass in the pelvis, associated with tenderness and rigidity of the vaginal vault, and should we suspect tubal pregnancy, the early symptoms of gestation, sudden collapse, rapid thready pulse, cold, clammy condition of the patient, subnormal temperature, marked pallor from loss of blood, uterine hemorrhage, and absence of leukocytosis with the presence of a mass in the pelvis are findings that will aid us in arriving at a proper conclusion.

Typhoid fever of abrupt onset may call for a differential diagnosis; however, the pain, tenderness and rigidity are not usually so marked, while vomiting is usually absent. The frequency of epistaxis, the dicrotic pulse, headache, enlarged spleen, diarrhea, and the absence of leukocytosis with aid of the diazo reaction, Widal and blood culture, should enable us to make a diagnosis.

While occasionally other conditions may arise to cause confusion, I believe if one keeps a clear picture of the above-mentioned maladies clearly in mind that much fewer mistakes will occur.

Having arrived at a proper diagnosis the question naturally arises, When shall we operate?

Clinical experience teaches us that the symptoms of appendicitis offer no definite clue to the favorable or unfavorable outcome of a given attack, and no history, no matter how favorable, should induce us to recommend medical or expectant treatment. The course of an extensive abscess or gangrene of the ileum through thrombosis of the cecal branches of the superior mesenteric vessels may occur with insignificant pain.

The course being so variable and the symptoms so deceiving, how can we hope to be able to divide the cases into twenty-four, thirty-six or forty-eight hour periods, and conclude rationally that a case is favorable to operation because it is within a certain time limit, and another case should not be operated on because the patient has been sick over a definite number of hours?

The pathology may be extremely grave within twelve hours of the onset or it may be favorable to immediate recovery after a much longer period. I fully agree that the mortality is increased if the infection is beyond the appendix, or if peritonitis is present; but why let the infection get beyond that organ or peritonitis develop, if we appear on the scene before that time, and if not, stop it as soon as we do appear. If we were called to see a case of diphtheria we would not refuse to give antitoxin just because the most favorable time for its administration had passed.

If an abscess has occurred we know that the restrained, increasing pus is under tension and must of necessity travel the way of least resistance. We also know that this direction is not a favorable one. Hence, if drainage is established and the nidus of infection removed, the patient's opportunity for recovery is increased.

We know that acute appendicitis terminates fatally in a large per cent. of cases, and until we have more positive means of determining the condition of the appendix before operation, it is impossible to predict the outcome. Knowing the uncertainty, and if favorable the tendency to recur, the treatment is simple. Removal at once.

I wish to emphasize my position as being in accord with Dr. Holmes (and many others of the same opinion) when he said "there is no condition, from the time that the disease is relatively and exclusively diagnosed to the last expiring breath of the patient, in which an immediate operation is not indicated. The only exception to this rule which has ever been sustained by a grain of argument is that of refraining when the patient is moribund. Theoretically this can be granted, but who is wise enough to say when a patient is ripe for dissolution? The physician or surgeon has no right to fear for anything except his own mental integrity and he should never be afraid to proceed with a rational treatment, however much its results might tend to his confusion, provided it affords one single hope for the life and health of his patient. Every operator has unexpectedly found conditions which seem to preclude the possibility of recovery and yet after the removal of the primary focus of infection and drainage of the abdomen marvelous recoveries have taken place."

The truth of the last clause alone should be the means of bringing every conscientious physician or surgeon within the realms of safety. *I believe there is only one solution to the problem of reducing the mortality of appendicitis, and that is better diagnosis, and harmony among the physicians and surgeons that an immediate operation is not only always indicated, but imperative.*

In the treatment there can be no dispute as to the superiority of the muscle-splitting incision well to the outside of the abdomen, which enables one to open down on the appendix or an abscess without molesting the small intestine or endangering the patient to the possibility of rupturing an abscess from the inner side, and spreading the infection to the general peritoneal cavity; and for this reason I wish to condemn the right rectus incision as a very bad one. It has been suggested that a fresh incision in the abdominal wall affords an opportunity for absorption of toxins generated by virulent bacteria against which the system has not had time to

fortify itself, as a contra-indication to operation; however, it seems more rational to think that the absorbing powers of the peritoneum far exceed that of the small abdominal incision required for an appendectomy.

Much has been said about the advisability of removing the appendix at the time of operation should an abscess be present. While many advocate against its immediate removal under these circumstances, my results have been most gratifying with its immediate removal, which reduces the amount of infection to its minimum, affords better drainage, and frequently prevents thrombosis, extension of gangrene, secondary abscess formation, and lessens the possibility of fistula.

The technic of removing the appendix varies with conditions present. When gangrene has not extended to the cecum the appendix should be crushed and inverted with the purse-string or some modification without ligating the appendiceal stump before inverting, as the purse-string and reinforcement pockets the stump of the infected appendix and renders the possibility of an abscess, which might rupture into the bowel or the peritoneal cavity.

In the more severe cases where the bowel is extremely friable, it is usually better to ligate the appendix without attempting invagination. Should gangrene of a portion of the cecum be present it is probably the wisest plan to encircle it with a purse-string and invaginate without removal. Plenty of drainage should be inserted, the cigarette and glass tube being preferable. Avoid gauze drainage especially at the stump, as adhesions of the gauze in this location can do considerable damage on removal.

After-treatment. Where there is more or less infection of the general peritoneal cavity the Fowler position is valuable as soon as the patient's condition will warrant it. If the infection is quite localized some benefit may be obtained by having the patient lie on his right side. If the stomach has been at all irritable some unpleasantness may be avoided by lavage before the patient recovers from the anesthetic.

Strychnia should be given hypodermically at three-hour intervals, salt solution administered according to the demands of the patient, if critical; subcutaneous or intravenous; however, if this is not deemed necessary, it may be given by the drop method, to which may be added adrenalin chlorid, suitable stimulants or peptonized foods.

No attempt should be made to move the bowels until the peritonitis has subsided, and this is a point that should be emphatically emphasized, as attempts to move the bowels too early have cost the lives of many patients. Morphin in small doses may be administered, especially if considerable restlessness and peritonitis exist. Hot or cold applications to the abdomen will aid in elevating the pain and discomfort of the patient. Eserin salicylate is of the utmost value in controlling gas formation. The administration of food except as nutrient enemata should be interdicted until the inflammation has subsided.

During my internship in 1903 it was our custom to irrigate nearly every suppurative case with iodin, which induced considerable trouble, causing the wounds to become chronic with sinus formation, delayed

healing and necessitated frequent curetting of the wound or the application of caustic to effect a closure.

My results have been much more satisfactory by employing the simple method of sponging out the wound; or if irrigation seems necessary, the normal salt solution is much more satisfactory, as it is not injurious to the granulation. Another point of importance is that an infected wound should have the same care as one that heals by first intention to avoid contamination.

From the above remarks the following conclusions may be drawn:

1. The slight decrease in the death rate of a disease so amenable to treatment as that of appendicitis is not in accord with the advancement of surgery.

2. The frequency of appendicitis in young children is not generally appreciated.

3. The fact that nearly as many deaths of simple peritonitis are recorded at the present time as appendicitis discloses many serious mistakes and nearly every mistake so made means the loss of a human life.

4. The prevalent idea that surgical cases must be governed by definite periods of time is a fallacy that should be eradicated from the future literature and discussion of this subject.

5. The diagnosis of appendicitis is still a conjecture with many physicians.

6. The radical operation affords the lowest mortality as conclusively shown by the statistics of Price and many others.

7. The mortality of appendicitis will continue high as long as the profession stands divided as to the time of operation.

8. The solution of lowering the mortality is harmony and an immediate operation.

THE STATISTICS OF THIS PAPER WERE COLLECTED AS FOLLOWS

Massachusetts.—From 1900 to 1908 inclusive: Appendicitis, 2,192 deaths; simple peritonitis, 4,007 deaths.

New Hampshire.—From 1902 to 1907, inclusive: Appendicitis, 161 deaths; simple peritonitis, 425 deaths.

Connecticut.—From 1904 to 1908, inclusive: Appendicitis, 494 deaths; simple peritonitis, 295 deaths.

Illinois.—From 1907 to 1908, inclusive: Appendicitis, 1,164 deaths; simple peritonitis, 372 deaths.

Maine.—From 1899 to 1908 inclusive: Appendicitis, 614 deaths; simple peritonitis, not given.

Colorado.—From 1905 to 1908, inclusive: Appendicitis, 465 deaths; simple peritonitis, 194 deaths.

California.—Year 1907: Appendicitis, 237 deaths; simple peritonitis, 171 deaths.

Maryland, except Baltimore.—From 1903 to 1908, inclusive: Appendicitis, 165 deaths; simple peritonitis, not given.

Oregon.—Year 1908: Appendicitis, 51 deaths; simple peritonitis, 53 deaths.

Louisiana.—Years 1906 to 1907: Appendicitis, 89 deaths; simple peritonitis, 66 deaths.

New Jersey.—Year 1907: Appendicitis, 183 deaths; simple peritonitis, 191 deaths.

Washington.—Years 1903 to 1906, inclusive: Appendicitis, 241 deaths; simple peritonitis, 264 deaths.

Vermont.—Years 1895 to 1909, inclusive: Appendicitis, 507 deaths; simple pertonitis, 713 deaths.

Indiana.—Years 1900 to 1909, inclusive: Appendicitis, 1,824 deaths; simple peritonitis, 2,775 deaths.

New York.—Years 1907 and 1908: Appendicitis, 275 deaths; simple peritonitis, not obtained.

DISCUSSION

Dr. Chas. Davison: Dr. Eddy has covered the ground so completely that there is little to discuss. Statistics are like a double-edged sword. They can count both ways. Their value depends on the men who make them and those who compile them. The statistics cited indicate that the mortality from appendicitis is not lowering. But we forget that appendicitis is relatively a new disease for which we have operated less than twenty-five years. Many cases, even in the past few years, have not been diagnosed, and the patients have died of something else. The diagnosis is being applied more frequently now to cases that formerly were called something else, and consequently the death rate is higher, although it is being lowered by operation.

It seems to me that the diagnosis is so easy that a mistake should scarcely be made. The cardinal symptoms of acute infectious appendicitis are pathognomonic, ruling out the fibroid appendicitis of Morris and appendiceal colic. There is first the diffuse abdominal pain followed immediately by nausea or vomiting, as the result of the pain. This pain continues for twelve, eighteen or more hours, and then it localizes at McBurney's point. Then there is the temperature elevation. When we have these symptoms in that sequence we know that it is appendicitis, and having made the diagnosis it is useless to do more because we cannot tell what is going on inside. Operation is demanded at once.

The treatment is operation in every case, except in the case of patients who cannot stand an operation because of some dyscrasia or who are sick from some other cause, where it would be fatal to operate, or where a surgeon cannot be obtained. In these cases the Ochsner treatment should be resorted to, but not in any other. The world owes Dr. Ochsner a debt of gratitude, not because of the effect of this treatment on appendicitis, but as a pathfinder, in the working out of the treatment of general suppurative peritonitis. We relieve the tension by draining. Put the patient in the Fowler position, seep out the pus by hot applications on the outside, wash out the toxins from the blood by proctoclysis and keep the patient absolutely quiet and give no food or drink by mouth. Everyone of these being necessary for success.

The simple case of acute infectious appendicitis demands operation. The best treatment in the early stage before the pus gets out of the appendix is excision. It is a simple operation without fatality. Unless there is a surgical accident which cannot be controlled, the patient is well in a short time.

In a case of ascending inflammation or spreading inflammation following the infection getting outside of the appendix, producing a localized peritonitis, operation should be performed, but I believe that many patients have succumbed to the surgeon's trying to do too much. Go in quickly and get out quickly. Do not break down any adhesions because they are protective. If you rub these off or break them down, you open the way for the infection to become more general. The infection should be drained with as much certainty of cure as in any other case when the surgeon does not do too much.

As to taking out the appendix, that depends on the condition of the patient, the location of the appendix and the adhesions present. If the appendix can be gotten out easily, without tearing the adhesions, which is true nine times out of ten, take it out quickly as a foreign body, but the parts should be drained thoroughly.

In the stage of abscess, where the pus has formed, where adhesions have formed in every direction, where the infection has partially sterilized itself, the

pus should be drained as we would an abscess elsewhere in the body. But if these conditions cannot be met in any case the Ochsner treatment is applicable and an appendectomy done as soon as possible afterward.

I do not quite agree with Dr. Eddy as to the location of the incision. When we expect to do a simple appendectomy the incision should be through the side of the right rectus muscle, making a small opening, pulling the appendix up through it and removing it. I apply two purse string sutures of catgut, one going through the intestine entirely, then invaginating the stump, drawing the purse string tight with the object of cutting off the blood supply, and leaving the stump of the appendix draining into the large bowel. Then cover up the stump with another purse string suture which will bury the first row of sutures and prevent seepage. Going through the rectus muscle gives poor drainage, but it is a good place if we wish to prevent the occurrence of hernia.

If there is a probability for draining as in the second form of appendicitis, the ideal incision is at the linea semilunaris. It is the thinnest part of the abdominal wall and is close over the seat of the disease. The fascia pulls apart and remains intact. If we try to go through the large flat muscles of the abdominal wall we destroy a certain amount of muscle tissue by infection and it is replaced by scar tissue which will thin out and hernia may occur subsequently. By going through the linea semilunaris, if hernia does occur, a herniotomy can easily be done and a firm abdominal wall is left.

In the abscess variety, I wall off the infected area with iodoform gauze, and drain by gauze only, not tube drainage. I let the gauze stay in place until it is pushed loose by the granulating tissue, at least a week; then take it out slowly, an inch at a time, so that the cavity can fill up without any pocket forming behind the gauze.

In the condition where there is an old walled off abscess, drain in a different way. Go right down through to the abscess, no matter where it is, because it is walled off, and you can do that work without infecting the abdominal cavity at all, if you are careful not to make pressure. You must tease your way through after striking the peritoneum because the cecum may be anterior to the pus and you may perforate it or some other portion of the intestine.

Dr. A. J. Ochsner: The paper is a credit to its author. I agree with everything he said in regard to the diagnosis. Ordinarily there is no difficulty in making a diagnosis if you make a physical examination. When one sees these cases in consultation, one frequently finds that the disease has existed for two or three days, and the doctor who sees the patient on the first day thought it was simply a case of indigestion, for which he gave him something. If he had made a physical examination then he would probably have made a correct diagnosis. By giving a cathartic or a little opium or morphin for the discomfort, he put off the diagnosis for twenty-four hours. Then an examination is made and the case correctly diagnosed, but, possibly, considerable mischief has been done in the meantime. Nearly always a cathartic has been given, and that moves the intestines about and carries the bacteria from the original site of infection, and that makes the condition much worse.

I have held for twenty years that so long as the infection is still in the appendix it should be removed at once because that disposes of the whole proposition, provided a competent surgeon is available. I believe that we can now all agree upon this point which I have always insisted. The reason for the mortality in appendicitis primarily is the failure to make a physical examination. The next reason for mortality in appendicitis comes from operating in cases in which the infection has already extended beyond the appendix; cases operated upon between the third and seventh day after the beginning of a severe acute attack. The third reason for the mortality comes from causing intestinal peristalsis by giving a cathartic or food by mouth. The fourth cause, which is not so common, comes from severe manipulations. The degree of manipulation required to make a diagnosis of appendicitis is very slight. I have seen very serious conditions occur from severe manipulations.

I have had this experience. A case of acute appendicitis occurred during the delivery of a child. I saw the patient on the fifth day when there was a severe peritonitis. It was too late for an early operation and too early for a late operation. I advised gastric lavage, nothing to be given by mouth in the way of cathartics, food or drink; rectal feeding containing twenty drops of deodorized tincture of opium was given every three hours. The next morning pulse and temperature were below 100. Two days later the temperature was 99 F. and the pulse 80. The patient continued in a normal condition two days; on the night of the third day the temperature rose after a severe chill. Later she had another chill. On inquiry I learned that she had been examined thoroughly by four physicians, then she had the chill and the rise in temperature. Three days later she had another violent physical examination made during a consultation with the same result. They finally left her alone and six months afterward we took out the appendix. The appendix had been gangrenous and during each of these examinations a little pus had been squeezed out of the appendix, and the chill, the rise of temperature and pulse were directly due to the spreading of the infection caused by these manipulations.

In these cases I place a large moist hot dressing containing one part of alcohol and two parts of saturated solution of boric acid on the abdomen. It is comfortable and no one is likely to touch the patient because it is too much trouble to take off the dressing.

Never operate after a beginning peritonitis until that condition is over.

When you cannot operate, wash out the stomach, give nothing by mouth until the acute attack is over, and then you can operate in safety. Dr. Deaver says that his mortality in this class of cases, since he has adopted this method, has been reduced to one-fourth of what it was before. Dr. Mayo says the same thing. You will get less than 2 per cent. of mortality in gangrenous and perforative cases if this method is employed.

You have the best possible condition for elimination of the infected organ and the prevention of general peritonitis if you give Nature a chance. In front and to the outer side and behind the infected appendix is the abdominal wall and below the pelvic cavity, which is accustomed to infectious material. There is the omentum which will surround the diseased appendix. This leaves only the inner side bounded by the small intestines which is the dangerous zone. The leukocytes rush to the rescue by devouring the bacteria and making an autovaccine. The omentum and peritoneum dispose of bacteria in infinite numbers, providing you keep the infection in that little circumscribed corner. The worst you will have is a circumscribed abscess which you drain easily and safely.

Dr. Eddy makes this mistake. He looks upon this infection on the third or fourth day as he looks upon an abscess. The diphtheria simile is wrong. The similarity is the same as in snake-bite. If you can shut off the circulation in snake-bite and stop the venom from circulating, by immediately constricting the extremity between the body and the location of the bite, you are safe, but let it spread and no matter what you do, the patient will die. In the same way all you have to do with the appendix is to hold still and give Nature a chance to build a cofferdam around the infection. So far I have not seen a single patient die from any form of appendicitis in which neither food nor cathartics were given after the beginning of the attack. That has been the experience of all men who have followed this method.

There is nothing more certain than what an appendicitis case will do if you give absolutely nothing by mouth, wash out the stomach so that nothing can pass into the intestines to cause peristalsis and put on a big dressing to prevent diagnostic abdominal massage, give exclusive rectal feeding, with proctoclysis according to Murphy's method. That patient will get well, unless he has been given cathartics and food before you begin the treatment. So that there is a certainty of what appendicitis cases will do if treated as they should be. Even in cases in which cathartics or food have been given before they are placed under this form of treatment the mortality is very small.

The incision is really a matter of personal choice. Men of equal ability have a different choice of incision. When we operate on a gangrenous appendix with pus, we go through the rectus muscle and then drain through a small McBurney incision so that we can sew up the primary wound. That is the method Deaver follows, while others follow the method Dr. Davison described. But that is really a personal matter.

The after treatment which Dr. Eddy described is good. We invariably employ the Fowler position in suppurative cases and fill up the blood-vessels by Murphy's proctoclysis. When these patients are nauseated we wash out the stomach, no matter whether there is emesis or not. That is as important after operation as before. Every patient who has nausea or vomiting or gaseous distention due to any intra-abdominal disease except a perforation of a viscus, should have his stomach washed out, no matter whether these conditions be due to gall-stones, peritonitis or whatever other condition may cause these symptoms.

Dr. I. H. Eddy, closing the discussion: If we could have harmony among the profession in this matter, we would have fewer cases of appendicitis of the suppurative and gangrenous type. While we are arguing as to whether or not to operate the patient is dying. In these infections, especially the streptococcic type, the time comes in many of them where the accumulation of infection and toxins overcome the resistance of the patient; however, by establishing drainage and eliminating a certain amount of infection and toxin, I believe many of the borderline cases can be saved. It seems to me in so severe an infection as acute appendicitis waiting for a more opportune time to operate is like a bomb with an ignited fuse, hoping as it were that the fuse may go out before the bomb is exploded. A few years ago I investigated the records of this city (published in a paper by Dr. Barrett) from the time of the first recorded death until about four years ago. At that time there were between three hundred and four hundred deaths from peritonitis yearly, but as the death-roll of appendicitis increased that of peritonitis receded in about the same proportion.

MEDICAL EDUCATION *

A. M. CORWIN, M.D.

Chairman of Chicago Medical Society Council Commission on Medical Education

CHICAGO

I am here because, as formulator, and mover of resolutions in the Council of the Chicago Medical Society, establishing the Chicago Medical Society Council Commission on Medical Education, and enforced Chairman of that Commission, I have a lively interest in the subject and perhaps some ideas worth while.

It is evident that on an occasion calling for a short paper, one must confine himself to some single phase of so big and many-sided a subject, or else take a generic, panoramic view. I have chosen the latter, relying on those who follow to discuss specifically. The aim will be to give you my personal viewpoint, briefly outline the purpose of the Commission, and glance at the horizon of the theme.

Is this really a matter to interest the general practitioner? None so much as he. No man who can look back in Chicago twenty years or more to those scant two years of six months each, during which he cultivated ischial calluses by long hours of contact with the "perch," but is

* Read, by invitation, before the North Side Branch of the Chicago Medical Society, Jan. 12, 1912.

wide awake when you say medical education. For under that label he absorbed the smell of iodoform and of the dissecting room, he memorized a peck or more of useless drugs, looked at a microscope, bought a long-bladed amputating knife (which he now uses for paper cutting), purchased calf-bound books which speedily became obsolete, learned how great was the orotund professor way down yonder in the arena, and after being roughly passed up by his fellows a sufficient number of times to knock off his corners, he was gently passed out by the faculty into the university of the world, to learn something practical from patients. The patients taught him much and considered this value received, which it often was. Assuredly the general practitioner and specialist alike are interested in this subject, for their sons are their competitors to-day, and to-morrow take their places. On them the practitioner must depend to keep him bright by the friction of competition and posted in the newest methods of laboratory and clinic. And when he drops the torch it is these sons who must catch it up to bear it with fidelity or hide its light under a bushel. Where is there a man of us who does not hope for his successor vastly better chances than he had himself?

Bread winners, fee collectors of necessity, the majority of us love our profession, are jealous of its reputation and quick to resent a slur on it.

The North Side Branch does well to set in motion a wider discussion of medical education among Chicago practitioners, whom it touches so intimately. There is special reason why we Chicago men are at heart interested, because we live in one of the world's best centers of medical thought, where an immense amount of first-class teaching, first-class operating, first-class work in internal medicine and laboratory research is being done — where, too, much has been tolerated that is unworthy.

The latter interests us partly because it has been held up to public view, as if it were our chief characteristic and so largely dominating the situation as to make us the so-called "plague spot" in the educational universe. Now we are inclined to feel that it is wrong to denounce Chicago in wholesale fashion, pointing to the black when the shadow is so small a part of the picture.

With no brief in defence of what is base or below the par of honor and efficiency, but with the desire to encourage every effort to help to put all the Chicago medical colleges and schools on a foundation of self-respect and public confidence, abreast of the best on earth, let us be fair enough to recognize that medical education has made tremendous strides in the last few years, during which some schools have obtained university connection or large endowments. With these aids in sight, they have been able to advance their standards, very much to their credit, even if failing in expected funds, they may have so far cut down the student income as to temporarily handicap them. It is evident that some of the less favored institutions were thus forced into the alternative of unfavorable comparison as to educational requirement or suicidal exaction of more strenuous standards.

How far and how fast we should try to push up these standards should be to some extent governed by friendly conference, open discus-

sion, wise and brotherly agreement between the colleges and the other forces working to better the situation all along the line, because of vested interests too valuable to ruthlessly wreck; not by secret plot, political pull and the long knife of competition striving to put some child "out of business" who really is a very promising child.

Our best colleges of yesterday were no better than the second raters of to-day. Before attempting to put the latter to sleep, let us be sure that they will not strive to emulate their more fortunate brethren. For emulate they must. Says the A. M. A. Council on Education: "So soon as conditions warrant the minimum requirement should be enlarged to include at least one year's college work in physics, chemistry and biology, and a reading knowledge of French or German." In that phrase, "so soon as conditions warrant," is enough elasticity to cover fair treatment.

All the while the fact is inevitable that we cannot be satisfied, in the long run, in this country with anything less than the best there is in the world in the preparation of doctors.

Is there any valid reason why Chicago should long play second rôle to Berlin or Vienna, Paris or London in the quality of her training for your boy? To say the change must take place now and occur in such an order, by revolution instead of by normal growth stimulated by active effort, is a different matter. Whatever the many of organized medicine can do to boost, to encourage free discussion, to spread information, to foster cooperation of forces and conservation of effort, it should do. The excellent work accomplished by the A. M. A. Council shows that the number of medical colleges in the United States eight years ago was 166, the high-water mark. This number has rapidly fallen to about 120 to-day, by amalgamation of two or more, or by death from inanition. The process of elimination is bound to go on as state and other university connections and private endowments enable the raising of standards to meet reasonable ideals. What the final reduction shall be no one can tell. During this time, eight years, the number of medical students has fallen from 28,142 to something below 21,526; the graduates from 5,747 in 1904, to 4,440 in 1910, up to 1911.

Under former conditions medical practice was seemingly threatened with overcrowding, so that the economic outlook as well as the prospect of a degenerating profession was not encouraging. But the facts seem to be that even under the rapid multiplication of medical schools up to 1904, since which time they have decreased, the proportion of doctors to population remained about one to 600, owing to the increase of the people.

Unless some check had been put on the number of schools under the old proprietary system, in time the congestion of the profession would have been probable. However, it was not so much this congestion that threatened us as the multiplication of poorly equipped men at the hands of a system which made the medical college the personal property of a few professors, solicitous to see their stock pay good dividends and too little concerned about the quality of doctors that they turned loose on the public. It was not the fault of us students of twenty and thirty years

ago that we had to learn most of our clinical lessons after graduation, but of the chaotic system of college equipment and management, and of state control. How marked the change that has taken place in one decade is best appreciated by the graduates of ancient days, who have been driven to various postgraduate measures to keep them in the van of practice.

The need to-day is not so much of fewer institutions as more uniformly better ones; not so much of fewer doctors as more uniformly better ones; and in a general way the better the training, the better the doctor. Whether there shall be fewer medical schools and doctors, or more, they must be better for the sake of the public, for the sake of the profession. We must agree, too, that the well-trained doctor must be prepared not only to diagnose, treat and prevent disease, but better fitted to fill the shoes of all-round citizenship; fitted to write, to speak, to organize, to lead in matters civic and social, religious and economic. For no man gets so close to the life of the people as the physician, no man more than he carries on his shoulders the weal of the community. Time would be well spent in reviewing the influence of our calling in human affairs in this country and abroad, and in pointing the moral.

I submit that we may very profitably prepare papers on the lives of Rush, Virchow and other medical leaders in popular reform and thought all the way back to Luke, the Good Physician and Biographer.

Incidentally, there are those who hail the day when Chicago may have but one medical college or university school — superb, all inclusive, all authoritative — a perfect educational machine, a gigantic trust. Personally, I feel that several such centers equally high would better insure progress by the honest, earnest rivalry that stimulates to excel. But this is a mere matter of opinion. Time may bring the other.

As an indication of the inevitable rise of public sentiment and the dominion of the best ideals in this country in late years, note the fact that of 120 medical colleges, forty-seven, including most of the state university medical departments, have adopted the preliminary requirement of one or more years of collegiate work beside the high school.

Perhaps of even greater significance is the minimum requirement of one or two years more than the high school course, adopted by nine state examining boards. Indiana on our eastern, Iowa on our western border are of the number, and with them are both Dakotas, Minnesota, Colorado, Connecticut, Kansas and even Utah. Into these states may not go for license to practice any graduate from our eight Chicago schools, except from two, unless they happen to have more than is required by those schools or by our practice act. It is high time for the whole profession and the intelligent laity of our state to do some real thinking.

But the foregoing remarks touch only a small part of the title; what does medical education mean? What is its scope?

A. On the one hand are its sources.

B. On the other is the control of it through the administration of state laws.

Under the sources must be counted, of course, the undergraduate training, preliminary and curricular. We shall not go into these here. The ideal has been worked out by those best fitted to handle the job, academically, practically, qualitative and quantitative. But the problem of standardization of curriculum of 900 well-balanced hours in each year within four consecutive years, is not so difficult, nor the general acceptance of its provisions so hard to obtain as the settlement of the question of preliminary training. This is fairly the storm center of opposing forces.

Four years of accredited high school or equivalent academic preparation added to grammar school is little enough, but the term accredited is troublesome. A very full report of the A. M. A. Council on Medical Education, published in *The Journal A. M. A.*, Aug. 10, 1911, sets forth the whole question, and recommends the brand wherewith acceptable medical colleges should be branded. A careful study of this is exceedingly profitable.

The value of the hospital year is well enough recognized even by medical students to make competition among them keen. And the rivalry between our own medical schools to cinch Cook County Hospital internships is wellnigh tragic in the give and take of reciprocal courtesies. The time is at hand when every medical college will have to guarantee an internship to each of its graduates, and the medical diploma without it will be like a dinner without meat. The modern multiplication of hospitals, especially if colleges continue to decrease in number, would seem to offer an easy answer to the problem. But there will have to be better cooperation between the medical schools than at present, and some means provided for standardizing the quality of work done in these hospitals, lest some students become infected with poor technic, haphazard management, slipshod methods of diagnosis and the operative dare-deviltry of would-be surgeons, more commendable for their nerve than for their judgment and skill. If the examination of medical colleges has stirred up a muss, we suggest that this field of hospital inspection and regulation is a fertile one for some new commission or philanthropic foundation looking for trouble.

And now opens up the wide acreage of postgraduate culture, not usually included under the subject in hand, but a most important part of it. Chicago may well look to her postgraduate schools, take account of stock and perhaps advertise a bargain-day sale. There is no greater need in the field of medical education than the establishment of an all-round, well-balanced institution or system of institutions to meet the desire of doctors to brush up a bit. And this is said with full appreciation of the excellent work being done along some special lines in Chicago. A commission to take up this question would also have its troubles.

The fifth source of medical education is the hospital, together with the dispensary. Of inestimable value, both undergraduate and postgraduate, in the manufacture of good surgeons and good internists; inestimable, too, is the harm done by both in their abuse of a sacred

trust — medical charity. The Chicago profession leading in this direction has only begun to touch on the dispensary share in the evil. The hospital is the big end of the educational feature, and responsible, we believe, for the big end of the wrong.

Sixth is the medical society, the power of which in the making of better physicians is nowhere so exemplified as in the achievements of our own society in its splendid federation of branches. The malign gossip of its detractors and misinformed critics is only a sad commentary on individual selfishness as opposed to patriotic principle.

Seventh, the practitioner himself. What manner of men are we in Chicago and in Illinois? Where did we graduate? How long ago? How many of us have taken advantage of the many sources of information referred to? The commission proposes to make a canvass of this situation.

Eighth is the library, its use in the college and out of it. A comparison of the number of medical men who patronize the medical library and the public using the general library, while not wholly fair, was surprising, and not to the credit side of our own profession as a learned one.

Ninth: To ignore the modern private and public laboratory in stimulating doctors to better know their patients would be unfair.

Tenth is the school of nurses.

Eleventh: The medical journal as a factor in elevating or lowering medical standards is obvious.

The advertising policy of medical journals in general has not been sufficiently scrutinized by our profession. The A. M. A. *Journal* and Council on Pharmacy have done valiant service in emphasizing this matter. Self-respecting doctors should refuse to subscribe for, contribute to or accept free copies of medical journals which persist in carrying obnoxious advertisements.

Twelfth: The lay press as a source of medical education is too often negative, positively harmful in its habits. Whether selfishly or maliciously so matters not so much. To misquote or openly fabricate or suppress facts or to refuse a hearing regarding a medical question, one side of which is published, is so common that we have come to expect it as a part of our recompense in the service of the public. But I fancy that an interview by representatives of organized medicine with the editors of the daily press, to ascertain who of them will give us a square deal, might be followed by the proper use of our own *Bulletin* in support of those papers who play fair.

The negative sources of medical education include all garblers of truth. I refer to quacks, advertisers, faith and false healers, and all manner of fake pathists who hoodwink society with one hand and empty its purse with the other. New laws only can control these. Our friends, the druggists, have not been altogether clean in this direction, for in the sale of patent medicines they have knifed the public and knifed the profession for a price, with the excuse that it was merely necessary business. So says monopoly. So says the pickpocket.

Doctors have been badly educated also by the proprietary gentry who, with lead pencils and smooth samples, have wheedled them into largely prescribing lovely "dope" with fancy names easily remembered by the laity. Who made Listerine and Glycothymoline and a dozen other household words? Neither the mixer nor the consumer. The doctor and the druggist have worked together for their own undoing.

B. The control of our educational system by the state through examining and licensing boards, and practice acts, is the other leg on which medical education stands. In high-class laws, high-class boards to administer them, and interstate standardization and cooperation for reciprocity lies the key to great reform in our educational system. This obviously depends on organized effort of the profession, education of the laity, and the election of clean, able men to our legislative halls — here rests the value of the doctor in politics.

One glance at the various practice acts in our fifty states and territories is almost disheartening, and yet much order is being wrought from chaos by getting together.

A single association including all our state boards is essential. They must get together so that worthy physicians in Illinois may practice in any other state or territory under our flag.

Publicity, examination, free discussion by honestly opposing elements, this combination is the source of light. Reform of conditions comes only through propaganda, informing and arousing the people affected by them. Only on the basis of wide education of the public is sound opinion possible. Criticism is sometimes raised that this or that committee has no power to enforce its findings, no authority, no standing, or that it is for whitewashing purposes. This one has the important function of accumulating facts, and when such facts are analyzed from the standpoint of conditions and conditions show a need of improvement, the majority of the people interested can and will act to bring about improvements. It is with this in mind that this Commission has been formed; it is the Commission of the Chicago Medical Society; its business is to find facts, bring together interested parties, and tell the profession all about it. Indiscriminate criticism of people and things is of no account, unsupported by evidence.

So the key to the situation in medical education is the finding of facts, and yet more facts, and then publication and discussion. As a result we shall know more nearly what is needed and how to do it.

This Commission goes at its work with no preconceived prejudice except for truth and improvement of conditions. Each of the eight colleges recognized by the State Board of Health is represented on it; its hunt after facts will be honest, and the plan of examination as exhaustive as possible. Honest differences of opinion cannot refer to these facts as such, but may properly spring from interpretation and varying ideas of what is best, now and in the future.

One optimist counts more than a whole regiment of pessimists. The booster is the genius of progress. To chronically knock and throw mud is a deplorable habit. To observe keenly, to criticize honestly and intel-

ligently and then to politically organize for reform should go hand in hand with a frank appreciation of merit in the activity of friend and foe alike. The optimist chooses to walk in the sunshine, but he scrutinizes the shadows. The booster bows his back to the load of gold, but refuses to shoulder junk. The search for truth anywhere is golden. Boosters' clubs and optimists' fraternities should find many ardent adherents among doctors. Let the members of the North Side Medical Society enroll to push this home movement for the common good; the corners of our mouths are up and there are signs of better weather.

SUMMARY OF SCOPE OF MEDICAL EDUCATION

A. Sources of medical education.
  I. Positive.
    a. Undergraduate.
      1. Medical schools and colleges.
        Curriculum.
        Preliminary requirement.
        Hospital year — intern.
      2. Preceptors.
    b. Postgraduate.
      1. Schools.
      2. Hospitals, public and private (the abuse of medical charity).
      3. Dispensaries, public and private (the abuse of medical charity).
      4. Schools for nurses.
      5. Private and public laboratories.
      6. Medical libraries.
      7. Medical societies.
      8. The practitioner himself.
      9. Medical journals.
      10. The lay press (too often negative).
  II. Negative sources of medical education:
    Quacks, faith and fake healers.
    Druggists in the sale of patent medicines.
B. Control of medical education through practice acts.
  Licensure.
  Regulation of practice.
  Interstate standardization. Reciprocity.

MEDICAL LEGISLATION CONCERNING MEDICAL EDUCATION IN ILLINOIS*

GEORGE W. WEBSTER, M.D.
President, Illinois State Board of Health

In 1776 at the commencement of our history as an independent Nation, the thirteen States had a population of about three millions of people scattered from

* Read before the North Side Branch, Chicago Medical Society, Jan. 12, 1912.

New England to Florida, and between three and four thousand practitioners of medicine, only four hundred of whom had received the degree of M.D.

There were two medical colleges and one permanent hospital, and two States, New York and New Jersey, had laws defining the qualifications of physicians and surgeons, with provisions for enforcing an observance of the same.

By the union of the several states under a written constitution, all matters pertaining to general and medical education were left to the individual states. Six of the original thirteen states recognized their constitutional right and duty to legislate on the subject of medical education and medical practice during the first twenty years after the achievement of independence. Gradually other states passed laws, but they did very little to regulate the education, and less for the licensing of physicians, and they granted charters for new medical colleges as often as they were asked to do so by either ambitious or unscrupulous members of the medical profession. *The degree of M.D. was almost everywhere accepted as authority to practice medicine without either examination or a license.* The college that offered to confer the degrees on the shortest course and smallest fees, generally drew the largest class. Under these conditions and tendencies, the annual course of medical college instruction progressively shortened from six months to sixteen weeks or even less and no semblance of preliminary education was exacted, and, while the population had only increased from three million to seventeen and a half millions, in the year 1844, the number of medical colleges had increased from two to forty and the annual number of graduates from fifteen to over one thousand, this being one graduate each year to each 17,500 of the population.

"During the first thirty or forty years of our national history, the legislatures of nearly all the states then existing, except Pennsylvania, Virginia and North Carolina, had enacted laws for the avowed purpose of protecting the citizens from the impositions of ignorance and empiricism, and for promoting medical science. That these were the real motives for enacting the laws referred to, and especially the first one mentioned, that of *protecting the citizens against impositions*, is abundantly shown by the preamble and titles attached to the several acts. The idea of *protecting* the *profession* or of *investing* it with *special privileges*, was the discovery of a later period and was diligently fostered by all the advocates of 'pathies' and 'isms' of the day. And yet, so persistently did the advocates of these represent to the politicians and legislators of that time the idea that all the penalties and restrictions against uneducated and unlicensed practitioners were only *designed to enable the regular profession to employ a monopoly of the practice and to restrict the liberty of the citizen in the employment of whomsoever he pleased*, that during the decade from 1840 to 1850, nearly all such restrictions and penalties were repealed by the legislatures of the several states, and it was during this period of adverse legislation and active aggression on the part of the advocates of the two leading systems of exclusive dogmas in medicine, that the movement in favor of establishing a permanent, national medical organization began to attract attention and to assume definite shape."—(N. S. Davis.)

It was under these deplorable conditions that Dr. N. S. Davis, then a young delegate from the Broome County Medical Society, at the annual meeting of the New York State Medical Society, presented a set of resolutions declaring in favor among other things of "having all examinations for license to practice medicine, conducted by State Boards independent of the college."

These resolutions laid on the table for a year. At the meeting in 1845, they were fully discussed and it was pointed out that if this standard was demanded for New York alone, it would only cause the students to abandon these colleges for those of Pennsylvania or the New England States.

It was thus clearly recognized that what was needed was an elevated and uniform standard of requirements for the degree of Doctor of Medicine by the various states, with the examinations in the hands of examining boards. This need led to the calling of a national convention which met the next year, 1846, in New York City, and this led to the formation of the American Medical Asso-

ciation, which was organized at Philadelphia in May of the following year, 1847.

At this meeting, Dr. Davis' resolution that the teaching and the licensing power be separate, created more discussion than any other. Notwithstanding the fact that under our constitution the license and control of the practice of medicine is clearly recognized as a legitimate exercise of the police power, and notwithstanding that as early as 1844, Dr. N. S. Davis had so clearly and forcibly pointed out the necessity of licensing boards separate from the college faculties, and notwithstanding that this was urged, not as a measure in favor of the physicians, but as a means of protecting the people against incompetency and fraud on the part of the medical profession; nevertheless, the people of the several states were very slow to recognize their rights under the Constitution and to invoke the police power by means of examining boards. And if we except the law of 1817, the Act of 1877 was the first attempt of the State of Illinois to legislate in regard to State Medicine and to regulate medical education and medical licensure by law.

At this time the conditions obtaining in the state were indeed deplorable, as there were 3,600 non-graduate physicians practicing medicine in the state.

In 1880, there were 110 medical colleges in the United States, only fifteen of which exacted any entrance or matriculation requirements whatever, and in only fifteen was the course graded, and the average length of each of the two requiring repetitional courses was sixteen to twenty weeks. By this time, 1,400 of the non-graduate practitioners of medicine in Illinois had either left the state or ceased to practice. There were eight medical colleges in Illinois in "good standing" with the State Board of Health, in 1880, exactly the same number as there are to-day. Under the Act of 1877, the State Board of Health was given rather large sanitary, executive and legislative powers, one of the most important of which was that it clothed the Board with discretionary power to determine what should constitute a medical college in "good standing," such recognition entitling the holder of a diploma from such an institution to licensure in the state without examination. At the present time it admits him to examination. In accordance with this power a "Schedule of Minimum Requirements" was promulgated in 1880. Within three years the number demanding an entrance qualification had risen from fifteen to sixty-one, and the number of medical colleges requiring three courses of lectures had increased from thirteen to sixty-eight.

The three principal objections to the Act of 1877 were that it exempted all persons who had been practicing in the state for ten years, whether graduates or not; the fee of five dollars was too small to permit the Board to carry on the work satisfactorily and enforce the Act; the prosecution for practicing without a license was in form criminal, thus making it the statutory duty of the states attorney to prosecute when complaints were made. The Board itself had no administrative powers in this direction.

The Act of 1877 was repealed by the Act of 1887. The chief defect in the Act of 1887 was that it provided for the issuance of a license on presentation of a diploma from a recognized medical college, thus *practically leaving the licensing power in the hands of the medical school*, an evil that, as I have already stated, was clearly and forcibly pointed out by Dr. Davis over forty years before. Chiefly because of this provision, the law of 1887 was repealed by the Act of 1899. This law exempts no one as did the law of 1877, and recognizes no diploma as entitling the holder to a license, as did the law of 1887.

The law of 1899, with the numerous amendments passed since that time, is the Medical Practice Act which governs and limits the Board in its work of regulating medical education and licensure in the state, and it is to this law that I wish to briefly refer.

First, as to its defects. One of the defects in the present law is that it does not enable the Board to discipline for unprofessional conduct, or for any cause revoke the license of the holders of licenses issued prior to July 1, 1899, the time of going into effect of the present law. Governor Deneen has recommended that the law be amended so as to give the Board jurisdiction over all certificates ever issued and the Board in 1907, 1909 and 1911 sought to secure an amendment to this section from the legislature, but owing to a want of support from the

medical profession outside of the assistance of the Public Relations Committee of the Chicago Medical Society, and because of certain well known opposition, such as the resolutions of the Williamson County Medical Society, as well as the apathy and indifference of the ILLINOIS MEDICAL JOURNAL, it has failed to secure it. This amendment should be secured at the next meeting of the General Assembly, and it can be if it has the active support of the medical profession of the State.

The next point to which I wish to refer is the exemption under Section seven, of "Any person who ministers to or treats the sick or suffering by mental or spiritual means, without the use of any drug or material remedy." This has been referred to in the official organ of the State Society during the past year as follows: "Then comes the number, by no means small, of Christian Science healers, New Thought practitioners, Menopaths, and other phantastical names, pretending to use no medicine, and ostensibly curing by suggestion. We would estimate these at not less than three hundred."

The responsibility for the exemption mentioned in Section 7 lies at the door of the Legislative Committee of the Illinois State Medical Society of 1898 and '99. Each and every member of that Committee agreed in writing that the exemption should be inserted in the present Medical Practice Act then pending in the General Assembly, and the editor of the ILLINOIS MEDICAL JOURNAL making the criticism above referred to, was a member of that Committee. That section of the law concerning midwifery should be amended and the standard raised, but that is too large a question to be discussed at this time and is well worthy of an entire evening's discussion.

Perhaps the most important feature of all of the Illinois Medical Practice Acts was the one which authorized the State Board of Health to establish a "Schedule of Minimum Requirements" with which all medical colleges must comply in order to be in "good standing" with the Board. This provision authorized and empowered the Board to fix not only medical standards, but to determine the character of the entrance requirements as well. This authority and power remained in the hands of the Board from 1877 until 1908, when the legislature passed an amendment to the Medical Practice Act, Sec. 2b, taking from the Board the authority to establish a standard of preliminary education and providing that the diploma of an approved high school, or a certificate of a high school education, issued by the State Superintendent of Public Instruction, or like state officer, *"shall be considered satisfactory evidence of preliminary education."*

This fixes the entrance requirement in this state by law. It can only be changed by repealing or amending the law at some future meeting of the General Assembly, and I believe that this is the largest and most important and difficult question to be considered and acted upon by the Educational Commission of the Chicago Medical Society.

The above amendment to the Medical Practice Act was passed by the General Assembly in 1908, and I know of no one in the State Society who opposed it.

There are nine states and forty-seven medical colleges in the United States which now demand one or more years of college work in addition to a high school diploma as an entrance requirement *on paper*. But it is true that some of these states do not even require *documentary evidence* of a high school education.

If the Illinois standard of entrance requirements is too low, then the medical profession alone is to blame for it, and it can only be remedied by an amendment to the present law, or by repealing that part of section 2b, which fixes the entrance requirement, and then inducing the State Board of Health to change and raise the requirement.

So far as I am concerned, and I voice my personal views only, I am glad of this opportunity to go on record again on this question, although I have been on record for many years.

In a report on "The Curricula of American Medical Colleges," which I made at the meeting of the National Confederation of State Medical Examining and Licensing Boards at Atlantic City, June, 1904, among other things I said:

"The idealism of the German university maintains that the object and aim of an education is to develop in a symmetrical manner the mental faculties, to enable

one to live to the utmost, to enjoy being. It is a doctrine of being, rather than of doing, of idealism rather than of realism, of the theoretical rather than of the practical."

On the other hand, there is a very large class who insist on the social, and more especially the economic, utility of all human actions. They believe in the practical, the utilitarian, that which produces immediate results. They want men who do things.

The former argue that a man should devote 7+4+4+4+2=21 years of the best of his life to acquiring an education. Such a man, if he was always well, enjoyed good health in childhood, missed no time at school, and took no time for travel, would be ready to begin to earn his first fee at twenty-seven or twenty-eight years of age.

A system of education which demands that a man shall spend twenty-eight or thirty years of his life in preparation for active participation in its duties, that he earn his first fee at even 25 or 28 years of age, seems in this eminently practical age, and as measured by organized society, to be impractical and impossible.

But there is no standard of ideals or idealism. Culture is a changing ideal and cannot be used as a permanent test of educational processes.

Unfortunately, the question in the past has been, not what constitutes the very best preparation for the very best kind of life work, but, where can I get the largest number of degrees with the least work, the least expenditure of time, and a minimum of expense.

To-day it is not altogether a question of that culture and knowledge and idealism which will be a comfort and a solace to men of wealth and leisure; we have living issues and we want men and modern methods.

Between the extremes of idealism, on the one hand, and pure commercialism on the other, is there not some common, reasonable middle ground which is wise and conservative?

May we not agree upon certain principles, certain regions, even though some of the boundary lines remain at least temporarily in dispute? To-day, as never before, we are confronted by commercialism, the feverish pursuit of what "pays," as the one end and aim in life.

Uninfluenced by pecuniary reasons, unfettered by the influence or the arguments of the colleges themselves, especially the argument that they will suffer loss, we should decide what ought to be done; we should determine what constitutes a satisfactory curriculum, and this should be adopted and then enforced.

We should determine, as far as we may, what constitutes the ideal medical course, and then what kind of a foundation should there be under such a course, in other words, the character of the preliminary training.

I believe that the liberal degree has, in a sense at least, determined our educational standard; that it is the mark of the well educated man, irrespective of his calling, and that for those who are considering merely technical training rather than culture, there should be at least one year added to the medical course, a connecting link, and at present a weak one, between the high school and the medical school, and consisting of physics, chemistry, general biology and German or French, or both. Possibly the plan suggested by President Butler, of Columbia, would be even better than this. He says: "There should be a college course of two years in length, carefully constructed as a thing by itself, and not merely the first part of a three year or four year course, which will enable the intending professional students to spend this time as advantageously as possible in purely liberal studies."

Last year, seven years after I had made the foregoing recommendations, the Council on Education of the A. M. A., said, "A college education is recognized as a desirable preparation for a limited number of men, *but it is thought that it is not and never will be desirable to make such college education a minimum requirement to the study of medicine*, as it would make the age of graduation from 27 to 28 years, which is regarded as too old a period at which the young medical man should begin his life's work," and they recommended "a premedical course of

one or two years devoted to the sciences of chemistry, physics, biology and to modern languages," to be *"enforced as soon as conditions warrant."*

Has this time arrived? Should Illinois raise the entrance requirement to one or two years of college work in addition to a high school diploma, demanding documentary evidence of both, as an entrance requirement, enforcing it strictly and literally, and *do it now?*

The further fact that the Illinois Legislature enacted a law, making the high school education the highest entrance requirement that can at present be exacted, and at the same time preventing the state board from exacting a higher entrance requirement, would seem to show that the "plain people" are not making a very insistent plea for a higher entrance requirement.

Before attempting to answer this question, the following facts should be carefully weighed and considered.

First: It cannot be done in the very near future for reasons already assigned. It will require an amendment to or repeal of Section 2b of our present law, and then notice of a reasonable length must be served on the colleges.

Second: We cannot set up any standard for Illinois Medical Colleges exclusively; it must apply to *all colleges*, in the United States and elsewhere.

Third: There are over forty states and over forty standards and most of the states and the leading states at present, require only a high school education and many of them require no *documentary evidence* even of this. Illinois was, I think, the first state in the Union to exact this requirement and it is as rigidly and thoroughly enforced here as it is anywhere by any state in the Union.

Enforcing the present standards has caused a rapid decrease in the number of medical graduates and of medical students in the medical colleges of this country. For example, in 1910, there were nearly one thousand fewer graduates and nearly four thousand fewer students in the medical colleges of the United States, than there were in 1900; while in law, theology, pharmacy and veterinary medicine there had been a very substantial increase.

Fourth: It would probably be impossible to enforce a one or two years of college and a high school diploma and have it strictly and absolutely an *entrance requirement*, exacted of all applicants *before matriculation*. With forty diverse and more or less loosely administered standards of entrance, with many of them permitting of "conditions," to be made up subsequent to matriculation, the problem is easy only for those who have had no practical experience in this work.

Take the conditions as they exist to-day. Suppose a man enters the medical department of our own state university on credentials which are not satisfactory to the State Board of Health, graduates with honors, obtains a place as intern and comes up for examination. Shall we refuse him an examination? Those who ask for a strict, literal compliance with the law say, yes, refuse to examine him.

Let us suppose another case. Suppose a student enters Jefferson Medical College, Pa., on high school credentials which are satisfactory to the Pennsylvania board, but not to the Illinois board. Suppose he graduates with honors and returns to Chicago where his family and property and friends are and wishes to be examined. Shall we refuse him? Those who maintain that an entrance requirement should be strictly and rigidly enforced say, yes, refuse him. Instead of doing this, we send him to the State Superintendent of Public Instruction, and a certificate from him certifying that the applicant has passed a satisfactory examination in all the branches of the curriculum of a full four year high school course is accepted as a satisfactory entrance credential, although not obtained, or presented until after the completion of his medical course. In my estimation, this is the only fair, equitable, just position to be taken.

These questions are important, fundamental, urgent, practical and vital, and yet they are questions on which, so far as I know, the medical profession of this state, through its State Society, or its committee on Medical Education, has never expressed itself.

The time and opportunity have arrived. Will you go on criticising and finding fault, or will you put yourselves on record in regard to these important problems?

I take it as an accepted fact that the future of medical education is largely along the lines of preventive medicine, public hygiene and sanitation; that at the present time the strong tendency is to transfer all medical education to university surroundings; that in these surroundings university standards will be established and maintained and largely supported by the state, in the interests of the people, and that, in the words of Mr. Flexner, "those who represent the higher ideals of the medical profession must make a stand for that form of medical education which is calculated to advance the true interests of the whole people, and to better the ideals of medicine itself."

In the light of these facts I think that Illinois should keep in the front rank and should raise the entrance requirements as soon as this shall be found wise and practicable.

DISCUSSION ON PAPERS OF DRS. CORWIN AND WEBSTER

Dr. Bevan: Mr. President and members of the North Side branch: I am very glad of having the opportunity of hearing Dr. Corwin's paper on medical education, and to have the opportunity of discussing this subject before the North Side branch. For several years this subject has been actively discussed and investigated by the Council on Medical Education of the A. M. A. and by the Committee on Education of the State Medical Society. I am very glad to see that here in Chicago a committee on medical education has been appointed in the County Society for the purpose of investigating and reporting on existing conditions and doing all in their power to elevate the standards of medical education.

All of the medical schools here in the state of Illinois are located in Chicago and it is peculiarly appropriate that these should be investigated by a committee of the Chicago Medical Society. In looking at this problem of medical education it is first necessary to determine how much education is required to convert a medical student into the finished product of a safe, well qualified practitioner, at least sufficiently qualified to warrant the state authorities licensing him to begin the practice of medicine. Modern medicine requires very thorough training. The amount of training has been answered by the experienc of the older countries such as England, Germany and France, and a pretty general agreement has been arrived at. That agreement is that in order to begin the study of medicine a student should have in addition to a secondary school education a year's preparation in the study of physiology, chemistry and biology before he can begin the work of the medical subjects proper; then four years in the medical school and finally one year's clinical training as an intern in a hospital. I think that you will all agree with me that nothing short of this training fits a medical student sufficiently to warrant his beginning independent practice. None of you would recommend less than this amount of training to your sons or brothers or friends whose medical course you would supervise.

Therefore, assuming that we can secure this amount of training as a minimum requirement in the state of Illinois it should be done, first for the protection of the people of the state against ignorance and inefficiency, and in the second place such a minimum requirement would very distinctly elevate the entire profession of medicine in this state. Can we secure this minimum requirement at once? I think probably not, but I believe that it could be secured within a few years if there was earnest cooperation between the Chicago Medical Society, the Illinois State Medical Society, the State Board of Health and the colleges themselves. If all of these agents interested in better medical ducation would agree it would be a very easy matter to say that within three years the medical schools themselves and the State Board of Health would require this minimum preliminary requirement to the study of medicine, and we might agree that within four years no one graduating after that time could practice medicine in the state of Illinois without having had the year's clinical training in hospital work.

At the last legislature an amendment was passed to the medical practice act which makes it possible for the medical schools to make this clinical year compulsory. At the present time, apparently because of differences in medical politics it seems difficult to secure the cooperation of all of these agents to obtain the

desired result. When we are confronted with the great problems of medical education and public health we should say: "Away with medical politics," which interfere with our elevating medical standards and securing for the people of the state the value of the present day knowledge of preventive medicine. If we can secure the cooperation of all the best medical elements in the state, the medical schools, the county societies, the state society and especially the active, energetic support of the Chicago Medical Society, within three or four years we can place Illinois in the forefront in medical matters of the states of the Union.

Dr. Corwin, in closing: Mr. President and Gentlemen: The hour is very late and I shall not further claim your courtesy, though the subject is mightily important and there is much to say. I will simply refer to the excellent remarks of Dr. Bevan, Chairman of the A. M. A. Council, whose assurance of cooperation both publicly and privately expressed, is appreciated by the chairman of the local commission. He agrees with me that the interested forces must get together for a better understanding, and concentrate upon this and similar great public questions in which partisan medical politics should not be allowed to enter, as it did in the last report of the State Committee on Education, so detracting from the force of that report by dragging this great question in the mire of partisan strife, with which it had nothing to do, and we say with Dr. Bevan, "Away with such medical politics in this question."

Incidentally, I would like to talk about an hour on the question of politics. Bevan properly deplores it in this question where all should unite to boost who want to see the condition of medical training and medical practice improve. Let him not forget, however, that though we may radically differ as to the policy of running our medical societies, whether the few shall dominate or the many be encouraged to take an active hand, all factions can and should work together in pushing reform in medical education. He himself is a very active politician, and rightly so, for politics is from the Greek, politè, meaning citizen. Politics, citizenship activated, crystallized interest in affairs; religious affairs, ecclesiastical politics, often the hottest kind; public affairs, general politics; medical society affairs, medical politics. It is this kind of interest stirred up in Cook County Medical Society that has so increased her efficiency in the last few years. But like lawyers, or men on the football field, let us all learn to fight our partisan battles on clean principles and then strike hands with the winners in the interests of the whole profession, the weal of which is bigger than the success of individuals. The fact that Bevan and I are together and working on the square to help solve the problem of medical education shows that both of us have learned how to differ and fight each other hard in one direction and then line up on the same side for an honest fight in another.

THE VALUE OF LABORATORY ANALYSIS IN THE DIAGNOSIS OF DISEASE*

FLINT BONDURANT, M.D.
CAIRO, ILL.

Laboratory analysis as an important aid in diagnosis has been established as a necessity if the best work is to be done in the practice of medicine. I have little use for the man who considers the clinical side alone and ridicules the laboratory phase; on the other hand, I am not in sympathy with the extreme scientist who is not practical enough to correlate his findings with those of the clinical. I believe that the two should be combined.

My subject is a very broad one, so much so that I hardly know how to handle it or where to begin. Its extent is so great that I must of necessity talk at random. Consequently I will dwell on the significance

* Read before the Alexander County Medical Society, Nov. 16, 1911.

of laboratory analysis to diseases, occasionally mentioning points in technic which I have found profitable, and all in all confining myself simply to points which appeal to me at this time, taking them up by systems.

A. RESPIRATORY TRACT

In the bacteriologic examination of the throat conditions, the question of diphtheria is the most important. I know of no field in bacteriology where personal equation plays a more important part than in the diagnosis of this condition. The Klebs-Loeffler organisms are oftentimes found in normal throats and so the question of local resistance is important. In securing a swab from the throat it is always best to do so from the edge of the membrane, as here the bacteria are the most active, for on the surface of the membrane are deposited most of the associated saprophytic organisms. However, as a rule, especially in struggling children, we cannot be so select in our choice. We are usually not able to make a diagnosis from the direct smear. Many men depend on the relative proportion of the cocci and bacilli in their probable diagnosis. If the latter are in the majority they consider it sufficient grounds for beginning antitoxin. Sometimes the morphology of the bacilli is so definite that we are able with a reasonable degree of certainty to make the diagnosis. In making a culture, blood-serum is the most useful, although agar-agar, potatoes, etc., may be deputized if necessary; but the growths are much slower and less characteristic.

On blood-serum the diphtheria organisms will grow more quickly than any other, manifesting themselves microscopically in six hours, and to the naked eye in the form of a growth in eight to ten hours. Consequently if we secure a bacillary growth in six hours on blood-serum, even though not presenting morphologic characteristics, we are sure of diphtheria. In the matter of stain, I always prefer Loeffler's methylene-blue. There are a number of differentiating stains recommended, but I have never been able to see any distinct advantage in any of them. Many times cultures are negative because antiseptics had been used shortly previous. Although the demonstration of diphtheria bacilli in association with clinical findings is conclusive evidence of diphtheria, yet the converse does not necessarily hold true. Even though the diphtheria organisms are not demonstrable, the clinical findings should take precedence because of the necessity of early treatment.

There is one condition of the throat which is often overlooked, and that is Vincent's angina. Clinically this presents a grayish membrane easily separated, leaving an ulcer, which emits a characteristic odor. This disease is due to the symbiosis of the *Bacillus fusiformis* and a spirillum which are almost invariably detected from direct smear.

In the examination of sputum the tubercle bacillus naturally first attracts our attention. So much depends on our statement that although the technic is exceedingly simple, yet we should use great care in the examination. The smear should always be permitted to dry in the air, for if heat is applied there are formed cracks which retain the carbol-fuchsin, and some of them being the size of tubercle bacilli, are sometimes mistaken for same. In the matter of counter stain, for several years I

have used a saturated aqueous solution of picric acid. The contrast between the dark red tubercle bacilli and the yellow background is a marked one. In fact the only things distinguishable are the tubercle bacilli, while the mucus, pus and all other organisms are combined in a yellow mass. There is only one disadvantage to the stain, and that is sometimes we are anxious to know the type of other organisms present, in which case methylene-blue stain is necessary; but the fault is overbalanced by the rapidity and ease with which the slide can be examined.

B. CIRCULATORY SYSTEM

In the examination of the blood I would first mention the leukocyte count. In my opinion the determination of the leukocyte count is one of the most necessary assets in the diagnosis of febrile diseases. Some infections give a leukopenia and others a leukocytosis. A simple way of remembering those diseases (which are six in number), which have a leukopenia, is by thinking of two G's, two M's and two T's, representing respectively German measles, la grippe, malaria, measles, typhoid and tuberculosis (uncomplicated). I will mention the most common infectious diseases, and the significance of the leukocyte count in each.

Typhoid Fever.—The most constant finding in this disease, when uncomplicated, is leukopenia ranging from 8,000 to 3,000. I have never seen a case of typhoid which did not show this characteristic, but conversely many times I have seen cases which presented practically all of the cardinal symptoms, but which later proved to be something else. I would never diagnose a case of typhoid in the absence of leukopenia, in spite of the fact that it presented all the typical symptoms and findings known, unless the typhoid bacillus was demonstrated in the blood. However, white corpuscles will increase in the face of complications, as perforation, hemorrhage, etc., but this is not always the case. Several times I have seen perforations in which the leukopenia persisted until death. But if leukocytosis does develop in the presence of abdominal findings, however slight, you have almost positive evidence of perforation and the outset of peritonitis. For example, I remember a case, some time since, which ran a white blood count of around 4,000 up to the third week, when early one morning he developed slight pains in the abdomen with a few other indefinite symptoms, to all of which ordinarily one would pay little or no attention. However, the leukocyte count gradually increased during the day, until late afternoon it was 12,000 with no physical findings of any note. A diagnosis of perforation was made which was corroborated at operation.

Pneumonia as a rule presents a leukocytosis ranging from 15,000 to 50,000. When I say pneumonia I am speaking of the ordinary lobar type due to the pneumococcus, in contrast to the influenzal and tubercular pneumonias which give leukopenia. There are times when lobar pneumonia will have a low leukocyte count, and this is spoken of in the textbooks as always indicating severe infection. However, this is not always the case, and I would modify their statement by saying that a low leukocyte count in pneumonia means either a very toxic condition or a very mild infection. Several times I have seen cases of the latter type in

which the clinical courses were mild and pneumococci obtained from the blood but gave a low leukocyte count.

In obscure cases of measles a leukocyte count will serve to differentiate it from scarlet fever, leukopenia being characteristic of the former and leukocytosis of the latter.

The Widal test in typhoid depends on the agglutinating properties of the blood and usually becomes manifest at the end of the first week, becoming more marked as the course progresses, and usually retaining that property for many years. Some cases show the reaction as early as the third day, while others may reach the other extreme and not manifest the reaction until convalescence, although this is rare.

Blood culture in bacteremias for the isolation of the infecting organism is a valuable aid especially in the early diagnosis of typhoid. As proportionately a larger amount of blood is necessary for the test, we usually introduce a needle into one of the superficial veins at the elbow, withdrawing from 5 to 20 c.c., mixing it thoroughly with the culture media, which we examine in twelve to twenty-four hours. The diseases in which we derive the most benefit by this are typhoid, pneumonia and septic conditions.

In typhoid it is the earliest positive diagnostic finding which we have at our command and the earlier in the course that we make the test in contrast to the Widal reaction, the more certain are we to isolate the organism. Positive results in the Widal test and the typhoid blood culture are both dependent on the same factor, namely, the agglutinating power of the blood, but they are at the opposite extremes. In the early part of the course when the agglutinating powers are absent or small, a positive typhoid culture is certain, but the farther the course progresses, the less liable is the blood culture to show, and the more likely the Widal to prove of benefit. And so we are fortunate in having at our command these two valuable tests with which we can determine the existence or absence of typhoid at any stage.

The examination of fresh blood microscopically is of great value in the diagnosis of malaria. I know of nothing so striking as the finding of these parasites with their dancing granules. There is nothing more definite and there is no mistaking them. Its field of usefulness is not so much in those cases which present the classical chills and fevers, as in those chronic malaria, where there may be entire absence of the above symptoms and nothing but an obscure picture. Stained blood smears are of great value to us, for examination of the blood elements and their differential counts. It is of paramount importance in the diagnosis of leukemias, anemias, trichiniasis, etc. The leukemias present as well as a high leukocytosis ranging around 200,000 to 400,000 great, relative increase in the number of lymphocytes and myelocytes depending on whether of the lymphatic or splenic myelogenous type. It is impossible to differentiate positively lymphatic leukemia with general adenopathy from Hodgkin's disease, without a blood examination.

Relative to pernicious anemia I wish to state that secondary anemias are commonly diagnosed pernicious anemia, when such is not the case. Because poikilocytosis and nucleated reds are present does not imply that

we have pernicious anemia, as any anemia of a severe type will show these findings. To diagnose pernicious anemia, in addition to the nucleated reds, and poikilocytes, the following characteristics must be present:

1. High color index.
2. Decreased coagulating power of blood.
3. Diminution of blood plaquelets.

Incidentally there is only one other disease that will give a low number of blood plaquelets, and that is purpura hemorrhagica. In all secondary anemias there is an increased number of blood plaquelets. A peculiar thing about pernicious anemia is that there are not only marked variations in the clinical course, at times much improved, and again worse, but the blood picture shows corresponding changes. The nucleated reds appear at times in crops and in a few days may be few or absent. Among the conditions in which valuable information is secured from the blood pictures are the marked relative lymphocytosis in whooping-cough, the relative increase of the eosinophils as well as leukocytosis in trichiniasis, this often being necessary to differentiate it from typhoid, and the basophilic degeneration of the reds in chronic lead poisoning. I have not seen a case of lead poisoning where this condition was not present.

C. DIGESTIVE SYSTEM

Although gastric disturbances can frequently, with certainty, be recognized from clinical manifestations, laboratory examination is essential for precise diagnosis and a rational basis for treatment. Subjective symptoms and physical examination often prove deceptive where a stomach analysis would be of great benefit. Both the motor and secretory functions of the stomach may be recognized by chemical, macroscopic and microscopic examination of stomach contents. For this purpose test meals composed of definite quantities of solid and fluid are used, which are allowed to remain in the stomach a certain length of time. I cannot go into detail here concerning the principle and technic of the examination. Suffice it to say that the test meal in general use in this country is the "Ewald test meal," consisting of two slices of white bread and a glass of water, given on an empty stomach. In one hour the stomach is emptied and the contents examined. There are several points in technic which I would advise in stomach work.

1. It is wise to give two or three test meals in order to eliminate mistakes, for often we find that the nervousness and psychic effect in those not accustomed to the stomach-tube are sufficient to give slight variations in results.

2. Always be sure the stomach is empty before giving the meal, for in pyloric obstruction the stomach may be filled and the test meal would be useless. So a routine practice in preliminary evacuation and washing is preferable.

3. On the depth at which the stomach-tube is introduced often depends one's success in evacuating the stomach. The average distance from the teeth line to the stomach is 16 inches, but as a matter of fact most stomach-tubes are marked at 24 inches, with the result that the tube often curled on itself.

In the test meal we must pay attention to the following points, which I simply mention, as it would require too much time to qualify.

1. Amount nominally varies from 50 to 100 c.c.

2. Acids. Free hydrochloric varies from twenty to forty parts, total forty to sixty while combined, is the difference between the two. Lactic acid, and other organic acids, occur only in the absence of free hydrochloric acid. Associated with these are usually the so-called Oppler-Boas bacilli, which are almost pathognomonic of pyloric obstruction of malignant origin.

3. Sarcinæ occur only in the presence of free hydrochloric acid with obstruction, and almost invariably mean benign obstruction, usually cicatricial from an old ulcer.

4. Occult blood, determined by chemical analysis, means ulceration from one cause or another.

5. Starch. Often mistaken for white cells. They are much larger and may be easily differentiated by adding iodin solution, which readily changes them to blue. Starch is present only with high amount of hydrochloric acid, which interferes with the ptyalin digestion.

6. Ferments. When free acid is present, rennin and pepsin are always present, and it is only when the acid is extremely low that we make the examination. Since it requires so long to examine for pepsin, for practical purposes we never do so, since the presence and quantity of milk-curdling ferment may be determined so easily. Depending on the amount of rennin present, we are usually able, in deficient secretion of the stomach to determine how much improvement in the secretion may be expected.

7. Mucus. Gastric mucus, unlike pharyngeal mucus, is intimately mixed with the food and is indicative of some form of gastritis.

Referring to specific conditions and their findings, I will also be brief.

1. Hyperchlorhydria. In this condition there is a large amount of stomach contents, food well digested and in solution, a marked acid odor and increase of hydrochloric acid. For practical purposes we consider all hyperchlorhydria cases not relieved of their symptoms in a few days under hyperchlorhydria treatment as gastric ulcer.

2. Gastric ulcer.

a. Marked increase in hydrochloric acid in 50 per cent. of the cases, normal amount in 40 per cent. and decreased amount in 10 per cent.

b. Blood may be present to the naked eye, microscopically or chemically. When present it is usually fresh.

c. Sarcinæ when present are almost positive evidence of pyloric obstruction of benign origin.

3. Gastric carcinoma.

a. Usually small amount of fluid and large amount of food.

b. Decrease or absence of free hydrochloric acid.

c. Blood oftentimes present in the form of so-called "coffee ground" and also chemically.

d. Organic acids and Oppler-Boas, if obstruction present.

e. If pyloric obstruction is present with lactic acid and Oppler-Boas, it is positive evidence of malignancy.

4. Gastritis may be classified into acid gastritis, subacid gastritis and gastritis anacid, depending on the amount of hydrochloric acid present. Intimate mixing of mucus with the food is sufficient evidence for diagnosis of gastritis. For the diagnosis of achylia gastrica there must be absence of free hydrochloric acid, and ferments with low acidity. We must remember that six to twelve parts of the total acidity may be due to acid phosphates taken in with the food. I have seen two cases of chronic diarrhea without stomach symptoms, because of achylia gastrica due to the fact that food was not digested and absorbed well and was therefore a mechanical irritant to the intestines. Needless to say these could never have been diagnosed without stomach analysis.

Feces Examination.—I believe that most of us must plead more ignorance on this important subject than in any other field. Not enough attention is paid to it, the reasons for which are obvious. The examination should consist of macroscopic, microscopic and chemical. The color, consistency and ingredients are important. Alcoholic stools are characterized by their color, consistency and foul odor, and mean obstruction of the common duct; but sometimes similar appearing stools are passed by persons on a fatty diet. Tarry stools are quite significant of some severe hemorrhage in the small intestines. Typhoid hemorrhage stools rarely present a tarry appearance, but the blood is usually bright red. Stools, of course, may be black from various drugs.

Mucus in the stools is a variable factor at times, due to inflammatory process of different kinds, and on other occasions in the form of so-called mucous colitis occurring almost exclusively in nervous women. Gallstones, intestinal worms and parasites are, of course, significant. The locations of an ulcer can often be determined with more or less accuracy. If an ulcer is present in the region of the pylorus, and blood is found entirely in stool, and not in stomach contents, it is quite significant of duodenal ulcer. If chemical test for blood in stool is positive and red blood corpuscles show microscopically, the ulcers are probably low down, while if test is positive and no erythrocytes, the ulcer is probably high up.

Cancer of the stomach will cause a change in the stool from a normal Gram-negative stool to that of a Gram positive, due to the large numbers of Oppler-Boas bacilli. Some men claim that this finding is present in early gastric cancer, before stomach findings are evident.

Pancreatic disease is supposed to give characteristic stools but I am not in a position to say anything concerning them, for all the cases I have seen diagnosed pancreatic trouble did not prove to be so at operation.

Now concerning amebic dysentery. It has not been a great while since it was universally believed that this form of dysentery existed only in tropical countries. It is claimed by some authorities that the cases developing here are contracted from eating uncooked tropical fruits on which ameba are imported. Others assert that some cases develop from a bad water supply and state that the reason it is not such a scourge in this country as in the tropics is because the environment is not so suitable for the organism. As well as I remember, out of five cases which I have had of this condition, only two came from the tropical countries and they from the Philippines. The others had lived in Chicago and vicinity all

their lives. Ameba are easily secured from the rectum by passage of a rectal tube, but better still by using the proctoscope and curetting the ulcers. They are quickly recognized microscopically.

Relative to the hookworm I have had no experience.

D. BODY FLUIDS

The same principles that apply to one serous cavity apply to all. There is a basis for differentiating transudate from exudate which I will not go into here. In inflammatory conditions of the serous membranes, infecting organisms, with the exception of the tubercle bacilli, are usually easily detected. When bloody fluid is present it is almost invariably associated either with a tubercular or a carcinomatous condition. If chylous fluid is present, it is usually due to cancer of the upper abdominal cavity. In this fact I have been especially interested in that the few cases I have seen presented few symptoms of carcinoma. If, in an exudate, the lymphocytes are in excess, it is especially significant of a tubercular condition. This is due to the fact that in low grade inflammation only the lymphocytes are called out from the blood, while in acute condition the marked chemotaxis necessitates an excess of the polynuclears.

It is often necessary to examine the cerebrospinal fluid in cases of suspected skull fracture, meningitis, etc., for the purpose of diagnosis as well as treatment. Those few cases in which spinal puncture has proved fatal were mostly brain tumors, near the base, the sudden change in the intracranial pressure being too great. In the matter of technic we should pay particular attention to asepsis, marked flexion of the spine, in this way widening the interspaces between the vertebræ, and to the prevention as much as possible of traumatism. When having difficulty in entering the canal and striking the vertebræ, we are very liable to secure blood, and so we should beware and not confuse this with blood in the spinal canal. New punctures should be made in suspected hemorrhage.

When withdrawing the fluid, we should particularly note the pressure under which it runs out. The exercise of the Noguchi test or its modifications is of some service in the examination for inflammatory process. Examination of meningitis cases are of particular interest. In tubercular meningitis the tubercle bacilli may be found in 75 per cent. of the cases by placing the fluid in the ice box over night and examining the film which accumulates near the top. It is very necessary to determine the type of meningitis from the treatment standpoint, for Flexner's antimeningococci serum has proved to be of as much value to epidemic meningitis as diphtheria antitoxin has to diphtheria. Under the daily aspiration and injection of the serum very interesting changes are always noticeable in the microscopic findings of the spinal fluid. If the lymphocytes are in excess before the injection of the serum, following that polynuclears increase; but after several injections and in the process of healing, they gradually disappear. The meningococci before the first injection are mostly extracellular, but following one or two injections they become mostly intracellulars and finally entirely so, so that it is often difficult to find the cells after serum injection. As they become intracellular they are being destroyed, and lose their morphology and staining characteristics.

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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MARCH, 1912

EIGHTH ANNUAL CONFERENCE OF A. M. A. ON MEDICAL EDUCATION, MEDICAL LEGISLATION AND PUBLIC HEALTH; IMPORTANT MEETING

These conferences grow in interest and importance and the last session held February 26 and 27 at the Congress Hotel, Chicago, was probably more interesting and important than any of the previous sessions. Representatives were present from every state and Porto Rico.

THE FIRST DAY

Dr. A. D. Bevan presided the first day and gave an opening address. Dr. N. P. Colwell presented his report showing a gradual but healthy improvement in medical college conditions. Unfortunately Chicago, for reasons of which our readers are well aware, shows the least change.

The presence of Mr. Frederic G. Hallett of London, the executive officer of the conjoint Examining Boards of the Royal College of Physicians of London, and the Royal College of Surgeons of England, who gave a comprehensive statement of the methods employed in the examinations conducted by these venerable and highly honorable bodies, was one of the very attractive features of the meeting. Mr. Hallett, by means of charts and diagrams, showed that it was entirely feasible to apply the

practical tests on patients to all applicants for license to practice medicine and surgery. Several of the states of the Union are already applying these methods, and there is no good reason why all should not. Dr. Bevan stated that this could be readily done in Chicago.

Another address which was highly commended was that given by Prof. Reuben Peterson of Ann Arbor, on the Relation of Medical School to the Intern or Hospital Year. The extensive and interesting discussion of this paper by Drs. Murphy, Vaughan, Means, Lambert, Jackson, LeFevre and Dyer representing all sections of the country, was notable in that each and every one commended the magnificent work done and contemplated by the Michigan school, and the necessity of giving each graduate comprehensive and systematic course in hospitals. The hospitals must be brought up to a standard, and made to be something more than boarding houses for the sick. A resolution was adopted requesting the Council to make a systematic inspection of all hospitals with a view to their availability for intern instruction.

The last topic, a symposium on Medical Education in the State, was notable among other things for the frank acknowledgment on the part of one of the speakers, that the Carnegie Report on Medical Schools issued in 1910 was correct, and one of the most beneficial criticisms on the existing conditions that could have been made. He took occasion to emphasize the language of that report which declared Chicago the "rotten spot" of the medical education world. The reiteration of this statement was greeted with an applause which spoke louder than words.

THE SECOND DAY — MEDICAL LEGISLATION AND PUBLIC HEALTH

Dr. Henry B. Favill of Chicago presided and uttered an address which was quite remarkable, and led up to the most dramatic climax it has ever been our privilege to witness. Dr. Favill's remarks were to the effect that the activities of the profession in political matters had brought about considerable criticism from a portion of the public. We had been accused among other things of being "a professional trust"; of using "trade union methods"; of "abandoning our high ideals and stooping to political methods," etc., etc. Because of these disagreeable statements Dr. Favill thought it the part of wisdom to at once abandon our efforts along political lines and depend altogether on our efforts to educate the people. He further made the remarkable manifesto that this wise conclusion reached after long and exhaustive study of the subject, being the personal opinion of the chairman, could not be discussed. All present were amazed at the temerity of the chairman, and wondered what would be the effect of his pretention to infallibility in a matter so near to the heart of the profession and so important just at this ime.

THE DRAMATIC CLIMAX

Scarcely had the chairman taken his seat ready to call for the next order of business when Dr. J. N. McCormack of Kentucky sprang to his feet, and in eloquent language called attention to the stand taken by the parent organization at the Los Angeles meeting. The representatives of the organized profession duly elected and clothed with plenary power

had pledged the organization at its annual meeting to a continuation of the contest which it had commenced, and instructed its committees and its journal to use their utmost endeavors to procure the passage of the Owen bill. If it should go out to the public that this conference, after all that had been said and done, had to-day taken a different stand, and should by its silence give consent to the doctrinaire sentiments of the chairman, a blow would be struck at the good faith of the profession from which it would never recover. Mr. Owen, who had taken his life and his political fortune in his hands in advocating our cause, would go down to a disgraceful defeat, and the blood of this sacrifice would be on our hands. McCormack said that he had just come from a contest in Kentucky, which showed the extremities to which the enemies of the profession would go to bring about his overthrow. Thanks to the united stand which the profession and the people of this state had taken, the enemy had been beaten horse, foot and dragoons. The effect of McCormack's eloquence was magical, applause punctuated his statements, and when he concluded the acclaim continued for several minutes. We have never seen anything like it on the floor of a medical meeting.

The supra climax came at 4:30 p. m., when a resolution pledging the active support of the profession to the Owen bill was passed by a unanimous vote of the members present. As our readers well know, this bill proposes the consolidation of the three existing bureaus into one central national board: (1) the Public Health and Marine-Hospital Service, now under the Treasury Department, (2) Vital Statistics, now in the Census Department, (3) Bureau of Chemistry, now in the Agricultural Departmetn. Another resolution adopted calls for the formation of a national council on public health under auspices of the American Medical Association. The aim is to bring together annually or oftener all federal, state and municipal health officers for discussion of health and legislative subjects. Through such an organization, it is contended, health officials will be able to standardize and systematize their work and wage a united campaign for proper health legislation in nation, state and city. Congress was asked for financial support for the international congress of hygiene and demography at Washington in September.

The Council on Health and Public Instruction was asked to draft a model medical practice act as soon as possible.

A committee to investigate the status of vaccination and small-pox statistics and to prepare a model bill on vaccination for introduction in legislatures of all states will be formed.

A committee to consider changes and modifications of the present model law on registration of vital statistics will be formed.

Establishment of a pure food and drugs board of examiners in every state was advocated by E. F. Ladd, state commissioner of foods and drugs of North Dakota, in an address.

There should be a board in every state to pass on patent or proprietary products coming on the market, he said. "When a product was found to be a fake no license for its sale should be granted; of if the advertising or descriptive matter were false or misleading — either that accom-

panying the product or as published through the press—then the license for the sale of this product should be revoked." Commissioner Ladd urged an agitation for the enactment of a general merchandise marks act, making it an offense for any manufacturer to sell any manufactured product under a false label.

Dr. J. W. Pettit, superintendent of the Ottawa tent colony, outlined a program against tuberculosis.

ILLINOIS MEDICAL EDUCATIONAL CONDITIONS

By J. F. PERCY, M.D.

Matters of legislation, as they affect the profession and people of Illinois along medical lines, are in a state of unrest. This, also, is preeminently true of medical education in Illinois. The Council of the Illinois State Medical Society, in October of last year, called a meeting of 100 at the La Salle Hotel, to consider the problems connected with medical education in the state. This committee authorized the formation of a subcommittee of five, which is now actively at work. The committee of 100 was a result of the report of the committee on medical education of the Illinois State Medical Society which was given at Aurora last June. The feature of this report was the severe arraignment of the dishonest educational methods of the low-grade medical schools of Chicago.

The present Chicago Medical Society bitterly censured this report and resented its conclusions; but recently has been forced to recognize its accuracy. This has been done by the organization of a committee known as the Chicago Medical Society Council Commission on Medical Education to "aid all sane efforts to solve the problems and improve the conditions of medical training in this state." This work, however, was not actively taken up by the Chicago Medical Society until the states contiguous to Illinois began to quarantine, educationally, against its low-grade medical schools. The people of Illinois and the medical profession in this state are both alike greatly indebted to these sister states of Ohio, Wisconsin, Indiana and Iowa, not to mention some of the states further west, for the help derived in our fight against state board of health inefficiency and medical educational ostracism, which have existed in this state for years. The refusal to recognize Illinois licenses, or its methods of medical education, by the surrounding states, is undoubtedly responsible for what seems to be a reasonable promise that the present Illinois State Board of Health is soon to be reorganized on modern lines. Unfortunately, the exigencies of politics, and not altogether the good of the people or that of the profession in the state, seem to have been among the determining factors in this slow response to the demand for better conditions in medical education in Illinois. The political support derived from those interested in and associated with the under-grade medical schools of Chicago, aided by the apathy of the medical profession in Chicago, have made possible the continued existence of the Illinois State Board of Health as at present constituted.

NEW SECTION OF THE ILLINOIS STATE MEDICAL SOCIETY

On the initiative of several specialists in Chicago, a movement has been started which will undoubtedly result in the formation of another section of the State Society devoted to consideration of diseases of the eye, ear, nose and throat. For a number of years the State Society has endeavored to have all papers offered at the annual meeting read before the entire organization, with the result that those devoting their time to well-defined specialties have seen themselves legislated out of existence. Undoubtedly the time has come when more consideration should be given to those gentlemen working along special lines. We therefore welcome the movement which has been started, and heartily applaud the action of President Newcomb, in appointing Dr. W. O. Nance of Chicago temporary chairman, and Dr. George F. Suker secretary of the new section. Dr. Suker writes us that he has had an enthusiastic response from every gentleman he has approached, and appears to have about sixteen papers for the coming meeting of the State Society in May. The clinics will precede or follow the day devoted to the reading of papers. The program will appear in the April number of THE JOURNAL, and any of our members devoting time and attention to diseases of this character will no doubt be welcomed to become members of this section and to participate in the program.

The following gentlemen have been heard from in response to the circular letter sent out by Dr. Suker: Oliver Tydings, W. L. Ballenger, John Loring, Edward Pynchon, Paul Guilford, H. M. Lebensohn, William Fisher, Thomas Faith, William Gamble, C. W. Boot, Willis O. Nance, Otto J. Stern, Charles M. Robertson, Richard J. Tivnen, Casey A. Wood, Frank Allport, Frank Brawley, A. H. Andrews and George A. Suker of Chicago; L. Ostrom, Rock Island; J. Whitefield Smith, Bloomington; Anna L. Zorger, Champaign; A. E. Prince, E. E. Hagler, A. L. Hagler, and R. J. Bullard, Springfield; F. A. Guthrie, La Salle; Don A. Vanderhoff, Rockford; A. M. Earl, Hoopeston; C. B. Voight, Mattoon; E. H. Bradley, W. C. Williams and C. B. Welton, Peoria; A. E. Sherman, Aurora; W. J. Rideout, Freeport; A. E. Middleton, Pontiac; C. F. Burkhardt, Effingham; R. C. Matheny, Galesburg; and others.

SURVEY OF THE STATE BY THE WOMEN'S CLUBS

The Illinois Federation of Women's Clubs, working in concert with the American Medical Association, we understand will very soon undertake the work of searching every township and ward of the state to discover and report on the number of cases of tuberculosis existing at this time, the surroundings under which they live and the care which they are receiving. The committee having active charge of this work are Dr. Mary G. McEwen of 1703 Chicago Avenue, Evanston; Dr. Josephine Milligan of Jacksonville, and other members of the federation who are also members of the medical profession. The large number of

women's clubs in the state covering nearly every county, will give this survey a distinct value. For obvious reasons they will be obliged to depend on the members of the medical profession to lend a helping hand. The committee of ladies not physicians, naturally will only learn of severe cases, and will probably overlook the milder cases and the surgical infections unless they receive the careful and intelligent aid of the medical profession.

We therefore bespeak for them the consideration of our members which the immense and important task deserves. When our people are once made aware of the prevalence and destructiveness of the white plague they will lend a helping hand to terminate its ravages. The women's clubs will be of very great assistance in every step of the contest.

IOWA BOARD SEVERS RELATIONS WITH ILLINOIS

(COPY OF NOTICE ISSUED BY THE IOWA BOARD)

DES MOINES, Jan. 29, 1912.

RECIPROCITY WITH ILLINOIS

In severing relations with the Illinois State Board of Health as regards reciprocal relations, the Iowa State Board of Medical Examiners has undertaken to examine into the methods of instruction, together with capacity for instruction and such other methods as might be legitimately required of medical colleges, of all medical colleges or institutions whose diplomas are to be presented to the Iowa State Board of Medical Examiners for the purpose of taking the Iowa examinations. A committee from the Iowa State Board of Medical Examiners visited all such institutions in the city of Chicago and in its report recommended that Rush Medical College, College of Physicians and Surgeons, Northwestern University Medical School, Hahnemann Medical School and Bennett Medical School be the only schools in Chicago whose diplomas would be recognized by the Iowa State Board of Medical Examiners, and that diplomas from these schools would not be recognized from graduates who entered after Jan. 1, 1911, unless said graduates had had a four years' course in an accredited high school, together with two years of liberal arts in an accredited college. All of these requirements are found enumerated on pages 7 and 8 of the Circular of Information containing the rules and regulations of the Iowa State Board of Medical Examiners. For this reason and this reason alone reciprocal relations have been withdrawn.

(Signed) GUILFORD H. SUMNER, Secretary.

AN EVEN BREAK

In commenting on the elevation to knighthood of two British "patent medicine" exploiters by King George *The Journal A. M. A.* (Feb. 3, 1912, p. 351) says: "The occasion seems one that is pregnant with opportunities for sarcastic comment, at the expense of royalty and monarchical

governments. But then we unwillingly remember that genial personage whose relationship to the Duffy's Malt Whiskey outfit and the canning company that sold short-weight products has often been the subject of comment — the gentleman whom a free people elected to the second highest office it has to give, namely, the vice-presidency of the United States." Inasmuch as one vice-president may not be considered the equal of two British knights, it may be well to remind our readers that, at the present writing, there is at the head of the Chicago school system one who promotes an "eye water" and runs an "alleged college of ophthalmology" for a side line. We refer to James B. McFatrich, M.S., M.D., president of the Chicago board of education, a high official in the Masonic Order, president of the Murine Eye Remedy Co., and president of the "Northern Illinois College of Ophthalmology and Otology." Should our Chicago readers wish to learn more regarding the person who is in control of their children's education, or the eye water which is not the one that Colonel Sellers was interested in but one whose exploitation should prove and seems equally profitable, we refer them to a discussion of this matter which appeared in *The Journal A. M. A.*, Nov. 7, 1908, p. 1614.

BULLETIN OF SANGAMON COUNTY MEDICAL SOCIETY

Following the lead of many other county societies in the state, the officers of the Sangamon County Society, recently elected, have commenced the publication of a monthly bulletin containing the program, news items and other matters of interest calculated to build up the society and make it more efficient. The expense of publication of the bulletin will be more than met by the twenty-four advertisements of the local firms contributing to its support.

THE LEAGUE FOR MEDICAL FREEDOM AT ROCKFORD

The League, carrying out its program of public meetings in the state, held a meeting recently at Champaign, which was attended by about 200 people. Mr. Mason, we understand, attempted to have a well-known member of the newspaper fraternity preside at the meeting, but failed.

The meeting which was held at Rockford was attended by a small number of people as at other places. The Rockford daily newspaper contained the following letter from Dr. H. A. Pattison, expressing in vigorous language the views of our profession on this matter, which we publish herewith:

DOCTOR EXPRESSES VIEWS

While most of the physicians of the city were in session at the Nelson house studying the best methods of combating the most fatal disease in our midst, pneumonia, and discussing the possible source of the epidemic now imminent, Dr. L. P. Crutcher was trying with all his energy to gather enemies to fight the American Medical Association and the Owen bill now pending in congress, which was framed to conserve the health of the people.

Because the average layman is unacquainted with the facts it is quite possible that the sophisms in Mendelssohn hall may be accepted as true. As stated in *The Star* yesterday morning, Dr. Crutcher claims to have read the Owen bill from coast to coast in every one of his addresses, but he did not read it to the small Rockford audience which greeted him. Every citizen should read that bill and see if he can possibly read into it any of the portentious things the National League for Medical Freedom claims it contains.

This bill, which is being supported by the American Medical Association, is also being vigorously supported by the committee of one hundred of the National Association for the Advancement of Science, composed of the leading scientists of America. Among the leaders of the American Medical Association charged by the League for Medical Freedom as being political bosses are these: John B. Murphy, president and world famous surgeon; Abraham Jacobi, for half a century a scientist educator and philanthropist; George H. Simmons, general manager and editor of *The Journal* of the American Medical Association, who has done more than any American has ever done to expose fraudulent patent medicine and fake cures and incur the enmity of their proprietors. William A. Pusey, treasurer, a skin specialist of Chicago, with a world-wide reputation in his field. Frank Billings, consulting physician and medical educator. M. L. Haris, well known Chicago surgeon. W. T. Councilman, professor of pathology of the Harvard university. Alexander Lambert, medical educator of New York City. J. N. McCormick, health expert and medical expert. These are the men whom Dr. Crutcher would have the public believe are political bosses.

Among the officers of the National League for Medical Freedom are these gentlemen; and the public is free to decide which of these groups is most interested in conserving the public health: They are Charles Wentworth Littlefield, mail order advertising quack of Seattle; B. O. Flower, president and founder of this league, is president of the R. C. Flower Medicine company, a mail order medical fake founded by the notorious quack and swindler, R. C. Flower; C. S. Carr, M.D., who has been in the employ of the Peruna company for years and does a mail order medical business of his own; Charles Huhn, ex-president of a cooperative patent medicine concern, known as the American Druggists' syndicate; A. F. Stevens, M.D., formerly with the Converse Chemical company, a St. Louis Nostrum concern, which offered to give away one share of stock with every bottle of its products.

The American Medical Association is in no way attempting to take from the people their inalienable right to employ in the hour of illness the practician of the system of healing of their choice. Nor are they attempting in any way to secure a monopoly of the healing art or through the Owen bill to extend the federal power so as to infringe upon the right of a state to regulate and control its own health affairs.

The association is trying to advance public health: (1) by exposing fraudulent patent proprietary medicines with false labels and deceptive literature; (2) by driving out of business quack doctors who prey upon the sufferings of their fellows; (3) by securing the passage of the Owen bill that sanitary science and personal and public hygiene may be more widely taught and scientific research be more thoroughly prosecuted; (4) by doing everything possible to raise the standards of medical education and close the doors of "diploma mills."

These it seems to me are objects to which every honest progressive person may give his approval.

Very truly yours,

H. A. PATTISON, M.D.

Correspondence

EXAMINATION FOR ASSISTANT SURGEONS

TREASURY DEPARTMENT
Bureau of Public Health and Marine-Hospital Service
WASHINGTON, Jan. 30, 1912.

A board of commissioned medical officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B Street, S. E., Washington, D. C., Monday, April, 8, 1912, at 10 o'clock a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine-Hospital Service.

Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: (1) physical; (2) oral; (3) written; (4) clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination of the various branches of medicine, surgery and hygiene.

The oral examination includes subjects of preliminary education, history, literature and natural sciences.

The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

On appointment the young officers are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago or San Francisco.

After four years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon.

Promotion to the grade of surgeon is made according to seniority and after due examination, as vacancies occur in that grade.

Assistant surgeons receive $1,600, passed assistant surgeons $2,000, and surgeons $2,500 a year. When quarters are not provided, commutation at the rate of $30, $40 and $50 a month, according to grade, is allowed.

All grades above that of assistant surgeon receive longevity pay, 10 per cent. in addition to the regular salary for every five years' service up to 40 per cent. after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses.

For further information, or for invitation to appear before the board of examiners, address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."

THE IMMORTALS

Feb. 21, 1912.

To the Editor:—I read your list of twenty immortals in the last number of the State JOURNAL, and I wondered if Semmelweiss, the discoverer of the cause of childbed fever, does not deserve a place in that list. Semmelweiss clearly indicated the true explanation of puerperal infection, and also of all forms of surgical infection, including surgical pyemia, and he pointed out in unmistakable terms the methods for the prevention of infection. He described much more definitely than Lister the source, the origin, and the methods of prevention, of all kinds of wound infections.

With best regards, I am Yours truly, J. B. DE LEE.

CHAMPAIGN, ILL., Feb. 29, 1912.

To the Editor:—I was greatly interested in your list of twenty of the greatest names in medicine prior to the twentieth century, which appeared in the February JOURNAL. Every individual in your list is certainly entitled to a high niche in the temple of fame, but I can not but express my surprise at some names you failed to include. Among these I name Vesalius (1514-1564), who at very great personal risk made investigations and prosecuted work that conferred on him the title "Father of Anatomy;" Robert Koch (1843-1910), who discovered the tubercle bacillus, also the cholera bacillus, and who, next to Pasteur, did most to make practical the science of bacteriology; Dr. Walter Reed, head of the Commission that discovered the cause of yellow fever and made practical the prevention of this disease which at times had hitherto prevailed as a veritable scourge in tropical and semi-tropical America.

With good wishes, CHAS. B. JOHNSON.

MR. STRAUS ISSUES A CHALLENGE

27 WEST SEVENTY-SECOND STREET
NEW YORK, Jan. 31, 1912.

To the Editor: In the efforts that are being made to protect the babies from milk-borne diseases such as tuberculosis, typhoid and scarlet fevers, diphtheria, sore throat and summer complaint, the well-considered policy of the Public Health Service and of the foremost health officers of the country is seriously hindered by attacks based on ignorance.

The statement is repeated with assurance, without proof, that the use of pasteurized milk causes rickets, scurvy and anemia. People are scared by these outcries into exposing their babies to infectious diseases, and the lives of helpless little ones are forfeit.

It does not undo the harm by showing that the Public Health Service, after exhaustive investigation, declared that "pasteurization prevents much sickness and saves many lives," and proved that the process does not impair the taste, digestibility or nutritive qualities of the milk.

It does not protect the babies from reckless misrepresentation for me to point out that in feeding 25,000 babies with pasteurized milk through my infant milk depots in New York City alone, never has one case of scurvy or rickets developed. Nor does it still the voice of mischief to cite the experience of Dr. Variot, in Paris, who fed 13,000 babies on sterilized milk without causing these diseases.

Several years ago, when a famous physician who opposes antitoxin and vaccination raised this cry of scurvy and rickets, I publicly challenged him to produce one case caused by pasteurized milk, and he subsided.

But the mischief of this warfare on the babies goes on, and many lives are sacrificed. If it could be known how many babies perish through their parents being misled by such statements made through recklessness or ignorance, editors would close their columns to such outbursts as they generally do to the tirades of fanatics who oppose vaccination.

In order to bring this issue to an end, I offer through you $1,000 for any case of scurvy or rickets or anemia caused by feeding a baby with properly pasteurized milk.

If any such case is alleged in answer to this challenge, I will leave the determination of the facts to Dr. Rupert Blue, Surgeon General; Dr. M. J. Rosenau, Professor of Hygiene and Preventive Medicine at Harvard, and Dr. John F. Anderson, director of the Hygienic Laboratory at Washington, or any jury that they may choose.

Very sincerely yours, NATHAN STRAUS.

ILLEGAL PRACTITIONERS AND STATE BOARD OF HEALTH

DR. J. A. EGAN, Springfield, Ill.

Dear Doctor:—I found your letter on my desk after my return from a trip to Philadelphia. Since my last letter I have seen copies of some interesting correspondence between yourself and Dr. Brooks and Dr. Buckmaster. It is very evident that the feeling of the Peoria City Medical Society is shared by a good many of the other societies through the state. There is no doubt that you have not given the profession of this state the support that you should have in getting rid of illegal practitioners. You have been a good deal more energetic in finding excuses to keep from prosecuting than you have in the actual prosecution. You seem to

be very prolific with reasons why a prosecution cannot be carried on successfully. Now, if you would show the same energy in devising ways and means for getting at these evils and in assisting the local society in the prosecution of them, there would not be so much room to find fault.

Your attitude regarding legislation is in harmony with your attitude regarding the prosecution of illegal practitioners. While the medical profession of this state believes that there should be one entry to the practice of medicine, and that requiring them to go through a four years' training and an examination before allowing them to practice medicine and to allow others to practice medicine with a great deal less training, is unfair, you sit in your office and twirl your thumbs and say that any attempt to make one entry or one set of requirements for the practice of medicine is an Utopian dream. Why do you not aid the practitioners of medicine in the prosecution of illegal practitioners, and why do you not aid the practitioners in getting rid of unfair competition by way of legislation instead of hunting around for expedients to obstruct their efforts? Instead of that you make out a case of *lese majeste* against any practitioner who presumes to criticize the State Board of Health or its secretary in any way, and subject him to the penalty of a bulky letter from the secretary in case he dares voice a criticizing opinion.

As regards the name and number of the bill which I said was supported by the State Medical Society, and to which I intimated that you had changed your attitude from one of support to one of opposition almost in a single night, I am confident that you know more about the number and name of that bill than I do. You also remember the occurrence. You also remember that you were very loath to have the duties of the State Board of Health divided because, forsooth, there would be two or three boards and consequently two or three secretaries. Of course, your opposition to the proposed change arose from a dislike to have your duties lessened and the amount of your work curtailed. Of course, the opportunity for power and influence by being virtually Secretary of the Board of Health and Board of Registration and Board of Embalmers, did not influence you to oppose the bill that was being advocated before the legislature by the legislative committee of the State Medical Society. If Governor Yates at that time had listened to the wishes of the medical profession instead of rudely and summarily turning them down, his further career might have been different.

Now, my dear Dr. Egan, the reports from Effingham and Fayette counties are very similar to the report from Peoria County. I have talked with members of the profession from Fulton County, and the same feeling is prevalent there, and I have heard the same feeling of lack of confidence in the sincerity of the Secretary in prosecuting illegal practitioners expressed by the members of the profession from all over the state, all of which illustrates the saying of a good and wise man who knew what he was talking about when he said: "You cannot fool all the people all the time."

As far as I am concerned, this is the end of our correspondence on this subject. I did not initiate it, so I will take the privilege of closing it.

Yours truly,

Nov. 20, 1911. CLIFFORD U. COLLINS.

ILLINOIS FEDERATION OF WOMEN'S CLUBS

1703 CHICAGO AVENUE, EVANSTON

Feb. 23, 1912.

To the Editor:—At the request of the Illinois Society for the Prevention of Tuberculosis, the Illinois Federation of Women's Clubs will make a tuberculosis survey of the state this year. The canvass will be made by members of the various women's clubs. From the nature of the task, these workers will need the assistance of the physicians in their districts. May I, through your columns, appeal to the profession of Illinois to give this effort their cordial support and assistance?

The data collected will be made a matter of record, and for this purpose cards have been furnished by the Tuberculosis Society. When completed, this tuberculosis survey will be the first ever made of an entire state.

In addition to the statistics compiled by the club workers, the interest in the subject which will be aroused in the women of Illinois will materially aid in the fight against tuberculosis. MARY G. MCEWEN,

Chairman of the Public Health Department of the I. F. W. C.

NEW AND NONOFFICIAL REMEDIES

Since publication of New and Nonofficial Remedies, 1912, the following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion with "New and Nonofficial Remedies:"

LACTIC BACILLARY TABLETS-FAIRCHILD are made from a practically pure culture of the *Bacillus bulgaricus*. They are designed for internal administration in the treatment of intestinal fermentative diseases by the Bulgarian bacilli, with the design of accomplishing the acclimation of the bacilli in the alimentary tract, so as to secure their characteristic action against putrefactive fermentation by the production of lactic acid. One or two tablets before or after meals. The diet should not contain an excess of proteid, but should afford sufficient sugar. Fairchild Bros. & Foster, New York (*Jour. A. M. A.*, Jan. 20, 1912, p. 191).

SALVARSAN (arsenphenol-amin hydrochloride, arseno-benzol, "606") is 3-diamino-4-dihydroxy-1-arseno-benzene hydrochloride, $HCl.NH_2.OH.C_6H_2As:As.C_6H_2.OH.NH_2.HCl + 2H_2O$, corresponding to 31.57 per cent. arsenic (As). It is marketed in hermetically sealed tubes each containing 0.6 gm. (10 grains) salvarsan. Salvarsan is a yellow, crystalline, hygroscopic powder, very unstable in air. It is readily soluble in water, yield-

ing a solution with an acid reaction. The addition of sodium hydroxid solution to an aqueous solution of salvarsan precipitates the free base ($NH_2.OH.C_6H_3As:As.C_6H_3.OH.NH_2$) which redissolves when more alkali is added.

It is given to adults in doses of 0.3 to 0.6 gm. (5 to 10 grains); for children the dose is from 0.2 to 0.3 gm. (3 to 5 grains). In infants doses of from 0.02 to 0.1 gm. (⅓ to 1½ grains) may be used. For a subcutaneous and intramuscular injection a suspension in a neutral fluid is commonly employed. This suspension is prepared as follows: The weighed amount of salvarsan is triturated with 0.35 c.c. normal sodium hydroxid solution to each 0.1 gm. salvarsan. To this liquid a solution of 0.1 c.c. of normal sodium hydroxid solution for each 0.1 gm. of salvarsan in 8 c.c. of sterile water is added drop by drop until the liquid is exactly neutral to litmus paper. If the neutral point is passed the excess of alkali must be carefully neutralized by a weak solution of hydrochloric or acetic acid. Subcutaneously, salvarsan may also be administered in form of oily suspensions.

These suspensions should be injected at once, using a syringe with a very thick platinum needle.

For intravenous injection a clear alkaline solution is prepared as follows: The weighed quantity of salvarsan is triturated with 0.7 c.c. normal sodium hydroxid solution for each 0.1 gm. of salvarsan and then more of the alkaline solution is cautiously added until complete solution occurs.

This solution is diluted with from 100 to 250 c.c. (3 to 8 ounces) of sterile physiologic salt solution (0.9 per cent.) and filtered through a sterile filter.

The contents of a tube should be used at once after opening and under no circumstances should the contents of a tube damaged in transportation or any remnants of the powder from previously opened tubes be used. Victor Koechl & Co. (*Jour. A. M. A.*, Jan. 20, 1912, p. 191).

WHAT ABOUT THE CHICAGO MEDICAL SCHOOLS? SOME PERTINENT QUESTIONS.

CHICAGO, Feb. 25, 1912.

To the Editor:—In regard to those second grade schools teaching medicine which in many respects were found to be operating against the laws of the State Board, as regards their preliminary requirements, curriculum, etc. I would like to have you answer the following questions in your journal, of which I have been a constant reader:

1. Has anything been done by the State Board to force schools of so-called "B" and "C" groups of Chicago to raise or comply with its requirements to the fullest extent, and if not, are these things going to continue?

[ANSWER.—Apparently nothing has been done and the condition seems certain to continue as long as the present secretary holds office.]

2. Are the various states which Illinois reciprocates with or did, are they going to all break away from this mutual agreement gradually, and not recognize the state of Illinois, which contains the metropolitan city — Chicago — of this section, just because her requirements are not of equal standard? Although two of her schools are, do they have to suffer because of the wrongs of the others?

[ANSWER.—A number of states have withdrawn from reciprocity with Illinois. Others will withdraw. Several states permit the graduates of the high grade schools of Chicago to enter their examinations.]

3. Do you think they ought to allow a night medical school to operate here, when it is the only state in the country which permits it?

[ANSWER.—The night school should not be permitted in any state.]

4. Do the neighboring states in which some of the universities of Chicago have also medical schools, giving the first two years there, do these states recognize those two years of work to their fullest extent?

[ANSWER.—We cannot answer this question.]

Thanking you for same, I remain Yours respectfully,

JOHN BURKE,
Cicero, Ill.

JOSEPH LISTER

In our list of immortals published in the February JOURNAL we appropriately placed the name of Lord Lister, who was yet living when the list was first made out. We deemed it wise to exalt his name and character even before his death, and now that he has passed to his reward there are absolutely no reasons why the remarkable achievements of this well-known man should not be recorded for the benefit of the medical profession and the world. We had the pleasure of attending the clinics of Lord Lister at the University College Hospital at London in 1886. Undoubtedly the fact that when we registered our card identified us with Lincoln's old home led Lord Lister when, during the course of the clinic he mentioned the opposition he had encountered in promulgating his doctrines, he concluded these remarks by stating that, like Lincoln, "he would have to keep pegging away." There were several analogies in the careers of Lincoln and Lister. Both of them sprang from the common people, and reached the highest places in their respective nations and professions by the force of individual effort. Both were possessed of minds of remarkable strength, and both were personally modest and lovable. Mr. Lister was more fortunate than Lincoln in that he lived to see the full consummation of the wonderful discovery made by him, and to receive the acclaim of the whole world for his beneficence. Lord Lister's fame is secure, he has a large place in the heart of the world because through him the method of healing has been made highly effective. Even in our era the triumphs of aseptic surgery may well be accounted as miraculous.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The Adams County Medical Society met in regular session on Monday, February 12, at the Elk's Club Rooms, Quincy, Ill. The president being absent a chairman was elected in the person of Dr. T. B. Knox, the former president. Those in attendance were Drs. Nickerson, Wells, Center, Reiffert, Ball, Beirne, Stine, Nichols, W. E. Mercer, Montgomery, Schullian, Groves, Mitchell, Zimmerman, Blickman, Pearce, Collins, Bates, Spence, Ruth, Christie, Gabriel, Williams, Lierle, K. Shawgo, Whitlock, Bloomer, Haxel, Knapheide.

After the reading of the minutes and the discussion of other important business matters the society adjourned for luncheon to the Hotel Quincy. Reassembling in the afternoon the honored guest of the day, Dr. W. K. Newcomb of Champaign, President of the State Society, addressed the members on "Plea for the Preservation of the Principles of Medical Ethics." It was both a very practical and interesting subject and one about which we as physicians are very apt to become careless and negligent.

Each and every member present enjoyed this paper, and thanked the president for reviving and renewing these principles in their minds. To show the appreciation felt, the secretary was ordered to place the name of Dr. Newcomb on the roll of honorary membership. Dr. J. E. Miller was elected to regular membership in the society. On motion meeting adjourned.

CLARK COUNTY

The Clark County Medical Society met at Casey, Jan. 11, 1912, at 1 p. m. Members present: Drs. Mitchell, S. W. Weir, McCullough, Johnson, Boyd, S. C. Bradley and Rowland. Visitors present: Drs. P. P. Haslitt, S. A. Smith, W. H. Stoltz, C. M. Harris, Wallace Young and Councilor Dr. E. B. Cooley of Danville, Ill. Minutes of the previous meeting were read and it was moved and seconded that the amendments, as recommended to the State Society By-Laws by Drs. Black, Zurawski and Coleman and voted upon at our last meeting, be rescinded. Motion carried; then previous minutes were approved.

The resolution relative to members of local medical society becoming *ipso facto* members of the A. M. A., were discussed and upon motion duly seconded, the Clark County Medical Society voted unanimously to oppose them. Moved and seconded that the application of Dr. E. E. Edmonson be laid on the table. Motion carried. Moved and seconded that the secretary-treasurer draw on funds of society sufficient amount to have some blank applications printed. Motion carried.

The applications of Dr. P. P. Haslitt of Marshall and Dr. S. A. Smith of West Union were presented and upon motion and second the rules of the society were suspended and the doctors elected to membership at once. Moved and seconded that all papers read at our meeting be sent to ILLINOIS MEDICAL JOURNAL, to be printed with the reports of said meetings and to begin with this meeting. Motion carried. Moved and seconded that amendments of Black, Zurawski and Coleman be voted upon at our next meeting. Carried.

Among the clinical cases reported were: A case of chronic appendicitis, with an acute exacerbation; pulse 120, temperature 98, abdomen rigid; treatment, very little by mouth, fed per rectum; morphin hypodermically, if necessary for pain; suggestion, continue treatment, except nothing by mouth, for few days.

Case, syphilis fifteen years ago; treatment at times since but none during last six years; patient alcoholic at present; three mucous patches in mouth;

glaucoma several years, now totally blind. Doctor asked to use 606, but refused to do it. At present is giving K. I. and mercury and leaves off alcohol. All who commented on the case thought it dangerous to use 606 in such a case, but considered it more effective in more acute cases.

Case of tetanus, from weed in hand; nothing used at first, later used antitetanic serum which seemed to relieve a few minutes at a time. Altogether used 36,000 units, but the patient died. Patient complained as though wrist was sprained. Suggestion: morphin in large enough doses to control spasms at least. Used it in two cases which got well.

Case of chorea, dating from ptomain poisoning. Resisted all regular treatment, such as Fowler's solution. Finally used twelve drops anhydrous arsenate of soda 5 per cent. solution hypodermic, five doses, five days apart and patient commenced to recover at once and gradually recovered completely.

Paper by Dr. J. Y. McCullough on "Diseases of Heart and Blood Vessels," which was good and appreciated by all present.

Moved and seconded that we adjourn to meet April 13, 1912, at Marshall. Motion carried. S. W. WEIR, Secretary-Treasurer.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Dec. 20, 1911

The Chicago Medical Society held a regular meeting, Dec. 20, 1911, with the president, Dr. J. M. Patton, in the chair. Dr. Robert H. Babcock read a paper on "Consideration of Points in the General Management of Pneumonia." Dr. E. C. Rosenow read a paper on "Immunity and Specific Treatment of Pneumonia."

Joint Meeting with the Aux Plaines and Northwest Branches, Dec. 27, 1911

A regular meeting of the Chicago Medical Society was held, Dec. 27, 1911, with the president of the Aux Plaines Branch, Dr. C. E. Hemingway, in the chair. Dr. E. C. Seufert read a paper on "Vomiting in Diphtheria." Dr. R. C. Michel read a paper on "The Hypochondriac." Dr. C. E. Hemingway read a paper on "The Conservation of the Doctor." Dr. Arthur Loewy read a paper on "Obstetric Practice Without Assistance or Assistants."

DISCUSSION ON THE PAPER OF DR. SEUFERT

Dr. F. O. Tonney: Dr. Seufert's paper upon this interesting subject has been very instructive and profitable. From the laboratory viewpoint, I have noted with special interest the suggestion that vomiting bears a close relationship to post-diphtheritic paralysis so frequently seen after the acute stage of the disease has passed. It seems quite consistent with our knowledge of nervous disorders that the vomiting may be one manifestation of a stage of irritation, such as commonly precedes the advent of most forms of paralysis.

I bring up the laboratory side of the question in this connection because the facts elicited by laboratory study of the diphtheria toxin offer a ready theoretical explanation of the occurrence of post-diphtheritic paralysis and these associated symptoms of nerve irritation. Analytical study of the poison produced by the bacillus of diphtheria seems to indicate that there are three distinct and separate elements contained in it. These are the toxoids, which are degenerated toxins, but which still retain the property of uniting with antitoxin; the true toxins, to which the active symptoms of diphtheria are due; and the toxones, to which the symptoms of paralysis are due, all of these substances unite chemically with antitoxin, and in so doing are neutralized in a certain definite order; the toxoids first, toxins second and toxones last, just as acids in a chemical mixture are neutralized in the order of their ionic strength. It is possible *in vitro* to add a sufficient amount of antitoxin to neutralize the toxoids and toxins, leaving the toxones undisturbed. Such a mixture when injected into a guinea-pig produces paralysis, which is in every respect similar to the post-diphtheritic paralysis of recovered cases of diphtheria.

There is a practical lesson to be derived from this experimental evidence. It is that we should give antitoxin in excess, rather than in sparing doses. The rational treatment of diphtheria calls for the neutralization not only of the toxoids and toxins, but of the toxones as well, in order that the occurrence of these distressing after complications may be prevented. In the light of our knowledge of the chemical behavior of diphtheria poison, it is better to err on the side of giving too much antitoxin than on that of giving too little.

Dr. W. Evan Baker: I would like to ask Dr. Seufert whether in the statistics he quoted anything was mentioned as to whether early diagnosis and early administration of antitoxin prevented the vomiting.

Dr. Seufert: Nothing was mentioned on that point, but as all the patients were treated in a hospital, it is not very likely that early diagnoses were made.

Dr. J. M. Patton: I believe that all the factors mentioned may cause vomiting, therefore, we ought to be very observing in making a distinction between early vomiting in cases with a favorable prognosis and the vomiting in cases of severe infection, where the vomiting occurs as the result of the rapid absorption of toxins and the early persistent administration of antitoxin in sufficient amounts is indicated.

I have seen a child die within two hours from cardiac failure, a strong robust boy of 11, who was apparently well at 8 o'clock and who died suddenly after a comparatively slight exertion at 11 o'clock, which shows that we may have a rapid and profound effect on one organ by the diphtheria toxin. These accidents may occur later in the disease as well as early and are probably due to the fact that an insufficient amount of antitoxin was given to prevent the effect of the toxins on the nerve centers.

These facts are the strongest arguments for the early administration of antitoxin, and its persistent administration until we are satisfied that we have control of the situation.

DISCUSSION ON THE PAPER OF DR. MICHEL

Dr. H. I. Davis: Unfortunately the doctor was not definite enough. Did he want to define hypochondriasis as a separate entity, or did he want to bring out the social aspect of the question? I doubt the existence of hypochondriasis as a separate entity. It is a state of mind to be seen in different forms of psychoses. The term is a misnomer. It used to be applied to imaginary troubles of some kind or other, especially stomach troubles, and in psychoses it is seldom the condition is not met with. When a patient is apathetic, he is spoken of as being hypochondriacal. A dementia præcox patient will go for weeks without food, because he thinks his food is not being digested. He will vomit for days at a time, because he has delusions referred to the gastrointestinal tract. In pre-paretic states or in certain forms of paresis the hypochondriacal state of mind is common. Some authors have described a hypochondriacal delirium. Hypochondriasis is not seen in old people, the doctor says. That is not true. It is seen very often in senile patients. The patient is depressed and complains just as was stated above. If the doctor had in mind the hypochondriacal state of neurasthenia, he was correct. The case mentioned by the doctor where his patient was sick in bed for twenty years, I think was plainly a case of dementia præcox. The second patient was probably a neurasthenic in a hypochondriacal state of mind. The condition is often seen in these patients.

As to the social aspect of the question, any one suffering from psychosis presents to some extent a social problem. We have thousands of these patients in our state institutions, and many more are still walking the streets. Among them are many who have delusions that they are suffering from different physical ailments. The doctor has described a mental attitude often seen in different forms of psychoses, and we must deal with these patients as candidly as we can. The greatest wrong we can do them is to allow them to remain in the wrong channels of thought from which they can not escape, and consequently they remain often cripples for the rest of their life.

Psychiatry is an important subject. Unfortunately it still remains a selective subject in some of our best schools. It should be made an obligatory subject and should be given a prominent place in the curriculum of every medical school.

Dr. Seufert: I believe that Dr. Michel used the term hypochondriasis as synonomous with neurasthenia.

Dr. J. M. Patton: The physician should be very careful before he classes those patients as hypochondriacal. In a case I recall the family physician stated that a lady was suffering from hypochondriasis and he refused to do anything for her. Within a week that woman died. There certainly was something wrong there.

Some time ago I had under my care a man who might easily have been classed as a hypochondriac. He came to my office every day for a long time, each time with a new pain or ailment, sometimes of the stomach, sometimes of the heart, or elsewhere. I examined him carefully many times and failed to find anything wrong. The last time I saw him I did not examine him but gave him a prescription. He had a cough which should have suggested something to me, but it did not.

Three or four days later he consulted another physician who withdrew a quart and a half of fluid from his groin. I neglected him because of his constant complaining, but he evidently developed the trouble between the time I saw him last and his visit to the other doctor. Therefore, we must be careful in handling these patients so as to be sure of our ground.

Dr. R. S. Michel (closing): I did not say that old people are not subject to hypochondriasis, because I know that they are. I admit that this condition simulates neurasthenia and dementia præcox and other nervous conditions, but in my opinion there is a certain definiteness about hypochondriasis which makes a clinical entity of it. The neurasthenic has a dulled nervous system, really a jaded system, while the hypochondriac has an over-active nervous system.

DISCUSSION ON THE PAPER OF DR. LOEWY

Dr. J. D. Scott: There is one point in the paper that is especially important, and that is the question of the prevention of infection. I have never had a case of puerperal infection, although I have seen them in consultation. They are often caused by too frequent examinations. Only one examination should be made to determine the degree of dilatation, and it should not be made until necessary. Many cases do not require any examination at all.

Dr. Potter: We always should know what we are doing. Too many examinations are wrong, but we should know what we are doing.

Dr. R. S. Michel: I want to emphasize the use of a disinfectant for the hands. The doctor suggested bichlorid. Physicians have been known to contract syphilis from a patient during delivery, as well as otherwise. The use of bichlorid is the best means to prevent such infection.

Dr. W. S. Pickard: I have heard and read much about the ability to diagnose position by external examination, but I have never been able to do it in such a way as to satisfy myself that I was right. As to early and frequent examinations, fore-warned is fore-armed. One never knows in an obstetric case what emergency may arise. No matter how carefully you may examine and observe the patient, before and during labor, you can never be sure when eclampsia will develop, or whether it may prove to be a forceps case or one of version. Above all things, however, you must know the position of the fetus in utero before you apply forceps or attempt version, and unless you make a thorough examination of the patient you cannot be prepared to meet the emergency.

Frequent examination or careless examination may lead to infection, but I always urge early and careful examination in every case so that I may know what I am doing.

Dr. Arthur Loewy (closing): Dr. Pickard expresses my idea as to early examination. I cannot take pelvic measurements in my cases, and yet it is essential to know what conditions are present, and that knowledge can only be obtained by making an examination. I do not believe in frequent examinations, but one

thorough examination, made so as to satisfy you as to the conditions present, will place you on the safe side every time.

Regular Meeting, Jan. 3, 1912

A regular meeting of the Chicago Medical Society was held Jan. 3, 1912, with the president, Dr. J. M. Patton, in the chair. Dr. Alfred S. Warthin of Ann Arbor, Mich., presented (by invitation) a paper on "Cardiac Syphilis." Dr. Frederic Baumann read a paper on "Status Concerning the Nature of the Wassermann Reaction."

DISCUSSION ON THE PAPER OF DR. WARTHIN

Dr. Jas. B. Herrick: I am sure that I express the opinion of all when I say that we are deeply indebted to Dr. Warthin for having given us this fine presentation of certain new phases of an old subject. In the light of his work, which is of great importance, the pathologist will have to revise his ideas as to the microscopic and macroscopic lesions of cardiac syphilis. He can no longer confine his notion of syphilis to a gumma, or to interstitial myocarditis which he believes to be syphilitic because of evidence in other parts of the body. He must now recognize certain fatty changes in the heart muscle as being syphilitic. These peculiar myxoma-like areas which have been described, as well as some of the more advanced fibrous changes, may be due to syphilis. And Dr. Warthin's work is interesting, too, as opening up the possibility of further study along the line of syphilitic lesions not only at the beginning of the aorta, where they have been recognized for a considerable time, but also in the endocardium and pericardium. Search for the spirochæte, therefore, is imperative.

To us as clinicians the lesson that this work brings is that we should search more carefully than ever for the evidence of syphilis in cases of cardiac disease that are not otherwise clearly explained and we should strive to recognize it only when it is still amenable to treatment. We are doing a great service to our patient if we recognize, for instance, that his aortic leak, that is marked and that has resulted in advanced permanent changes, is due to syphilis, if we then place him on appropriate treatment; but we shall do him a much greater service if we recognize this condition in its early stage. So, too, a case of fibrous myocarditis may be recognized as—with a strong degree of probability—due to syphilis; but we must recognize it in its incipiency if we are to be of much help, though to make a diagnosis may be a matter of extreme difficulty.

I think that we are often a little careless in not paying enough attention to slight cardiac symptoms. We pass by as insignificant the statement of the patient, especially if he is neurotic, that he has slight pains in the region of the heart. They are not of sufficient gravity to be called the pains of angina, and on physical examination we cannot make out anything wrong with the heart. And so we let it pass as a case of cardiac neurosis or as a local manifestation of a neurasthenic condition. And in similar manner we may ignore certain irregularities of the heart of which the patient has just cause to complain.

All these syphilitic processes must have their beginnings, and it is not impossible that some of these cases which we dismiss because of our inability on physical examination to find anything wrong represent the early stage of the process in the muscle or coronary arteries. So that it behooves us to search more carefully for a history of syphilis, to remember the possibility of late hereditary syphilis, to examine more thoroughly for stigmata of syphilis, and to remember the Wassermann reaction. In this way we may perhaps recognize the disease of the artery or muscle in the early stages when it is still amenable to treatment. Cardiac syphilis may be far more common than we have previously believed.

We should not, however, go to the extreme and recognize syphilis in nearly every case of cardiac disease. We must be on our guard and not conclude that because a patient has had syphilis that his heart lesion is due to the syphilis; and, again, we must remember that because a patient's cardiac and vascular symptoms improve under potassium iodid is not a proof that the lesion in the heart or vessels is due to syphilis. And lastly, though we may know that the condition in the heart is due to syphilis, we should not expect too much in the

way of treatment when we are dealing with the late consequences of syphilis any more than we would in the case of advanced tabes, although we recognize that tabes is syphilitic in its origin.

Dr. Chas. S. Williamson: In listening to this paper my thoughts wandered to the aorta. One of the things that has interested the clinician with a pathologic viewpoint has been the interpretation of many of the conditions found in the aorta. All sorts of attempts have been made by pathologists to classify chronic aortitis or endaortitis, and perhaps the most successful attempts were made by Heller and one of his pupils, Döhle. He studied a type which they regarded as distinctly specific of syphilis. They described a peculiar gelatinous thickening of the aorta not unlike atheroma but differing from it principally in the slight tendency to undergo calcification, and in a peculiar drawing in or retraction of the surface. But even these authorities recognized that all sorts of transitional conditions occurred between the truly specific type of syphilis of the aorta and atheroma.

The thought occurred to me that this peculiar gelatinous substance in the aorta, its lack of calcification, has, in view of the studies made by Dr. Warthin, had new light shed upon it. The peculiar transformation of the connective tissue in the heart would make it seem even more probable that these peculiar types of endaortitis are truly specific of syphilis. Some years ago, Reuter, of Hamburg, discovered the spirochæte in the aorta, and I am sure that Dr. Warthin has had an equally extensive experience in aortitic conditions and can tell us whether the Heller type of endaortitis or mesoaortitis is syphilitic, and whether the spirochætes can be found with the same degree of regularity there, as in the endo- or myocardium. The structures are identical embryologically, layer for layer, and it would be interesting if the substantiation of Reuter's results should come about in this way.

Dr. W. J. Butler: We have all learned a great deal from this paper. We should recognize, however, that the clinician is seldom able to make a definite diagnosis of cardiac syphilis. We are more or less in the position of recognizing the changes described by Dr. Warthin as being syphilitic, but any of these changes may be caused by other conditions, such as coronary changes and fibroid myocarditis, aortitis, etc. We recognize these changes, leaving the etiology to be decided later, or by employing the more recent advances in the study of syphilis.

We are strongly inclined to regard these cardiac changes as being syphilitic when occurring in younger individuals, and yet other lesions produce the same changes. The Wassermann reaction has helped us to determine with a greater degree of probability that the etiology in certain cases is syphilitic in character. It is a deplorable fact, however, that many physicians will refer a case for the Wassermann test and when they get a negative report they are inclined to change their diagnosis even though the clinical evidence may point strongly to syphilis. Much harm will result from this. A negative Wassermann does not at all remove syphilis as an etiologic factor. Clinical experience should decide. We should not depend on the laboratory for a decision.

Dr. Warthin, closing: The question of aortic syphilis is interesting in connection with that of cardiac syphilis. The pathologist had argued for many years that aortic aneurysm and many conditions of the aorta are syphilitic, but the clinician was unwilling to accept his belief. Now in the presence of the spirochæte in these conditions, we have a definite proof of the correctness of our old views. I have studied the aorta in all of my cases of syphilis. The aorta is not affected as often as the heart, but when we find spirochætes in the heart we also usually find them in the aorta, and also the same tissue changes in the aorta wall. My material is too limited to trace the sequence of these changes and to determine their relation to the end result. The trouble is that in syphilis we see the terminal changes and not the early ones. What we need are careful pathologic studies of the early cases of syphilis with reference to the localization of the spirochæte. As a rule, people do not die in that stage. Every case of syphilis dying in the early stage should be turned over to the pathologist so that the early changes can be studied.

Dr. Butler's point as to a negative Wassermann reaction is only too true. The reaction may be negative, and in a number of instances known to me the clinician has been led thereby to change his diagnosis and treatment, and yet at the autopsy the conditions present were found to be undoubtedly syphilitic, active lesions and spirochætes being present. The clinical importance of these localizations of spirochætes in the heart can hardly be considered at this time, but we must consider the spirochæte as a great factor in cardiac disease, even though we have not a definite clinical picture. All cases of cardiac death, insufficiency or dilatation should have the nature of the cardiac lesion determined, and in doing this an examination of the heart wall for the presence of spirochætes should be carried out by proper staining methods.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

The regular monthly meeting of the Chicago Laryngological and Otological Society was held Nov. 21, 1911, with Dr. Charles M. Robertson, president, in the chair.

DEMONSTRATION OF PATHOLOGICAL SPECIMEN SHOWING DISEASE OF PETROUS TEMPORAL SUBSEQUENT TO OTITIS MEDIA, WITH A NOTE IN REGARD TO THE ETIOLOGY OF SUCH CONDITIONS

E. GORDON WILSON

M. L., aged 7, was under observation for more than two years on account of a congenital heart lesion. During this time she had discharge from the right ear. There is no record of pain in or about the ear. Measles developed on April 8, 1911. The attack was moderately severe and ran the usual course. The aural discharge became more profuse, and on the 17th there was hemorrhage from the right ear, estimated at 10 ounces. From that time there was constant oozing, and on the 19th a second and worse hemorrhage occurred, estimated at 24 ounces. The patient now fell into a semi-conscious condition and died April 21, 1911. (Dr. Wilson is indebted to Dr. Walls for these notes and to Prof. Zeit for the post-mortem material.)

Post-Mortem.—The skin over the entire face was normal, neither swollen nor discolored. There were blood clots in the external and middle meatus extending between the cartilaginous external meatus and the tympanic bone into the upper part of the right parotid gland. When these were removed there was found to be a large abscess cavity lying on the under surface of the petrous bone. The whole inferior border of the petrous bone medial posterior to the temporal maxillary joint, including the Glaserian fissure, was bare. The joint itself was intact. On removing the skin over the parotid the posterior part of the glenoid fossa was found to be denuded of periosteum, the sharp inferior edge of the petrous was also bare and the finger could be passed into the abscess cavity as far as the apex of the petrous temporal bone. A probe could be passed along the under surface of the petrous bone into the upper postero-lateral part of the naso-pharynx anterior to the posterior vertebral fascia. The retro-pharyngeal glands were very large and there was pus in the naso-pharynx. The hemorrhage had extended into the upper mesial part of the parotid gland, the anterior and inferior parts of the gland were normal. The hemorrhage appeared to have come from a branch of the internal maxillary artery.

On examining the interior of the skull the dura was perfectly normal. Both lateral sinuses were normal; also the cavernous sinus. The right superior petrosal sinus, toward the apex of the petrous bone, contained a partly adherent blood clot. The dura over the apex of the right petrous bone, in relation to the ganglion of the fifth nerve, was thickened and more adherent than on the left side; there appeared to be a small area of localized inflammation at this point. The opening into the carotid canal in the right petrous bone was much more patent than on the left side. The osseous apex of the petrous showed no necrosis. The internal auditory meatus was normal.

The sequence appears to be:

1. Suppuration in ear.

2. Inflammation of the tympanic and petrous bones with periostitis and subperiosteal abscess.

3. Rupture into the pharynx.

4. Localized abscess in upper part of parotid gland, rupturing into external meatus between the cartilaginous and bony meatus.

Note: To demonstrate how easy involvement of the parotid can occur in such cases, Dr. Wilson showed a normal parotid capsule the gland having been removed. One notes that at the external auditory meatus the sheath fuses with the perichondrium and periosteum of the external auditory meatus and so there is formed a relatively strong partition extending back on to the petrous bone. The weak spot in this union is where the perichondrium and periosteum come together, and here it is where communication between parotid abscess and the external auditory canal occur. The weakest part of the capsule is medial, but here it blends more or less with the lateral aponeurosis of the pharynx.

Dr. Joseph C. Beck presented cases of plastic surgery of the head and neck in the various stages of development, some before operation, some after one or more operations having been performed, and some completed. The following cases were briefly demonstrated and will be more fully described and illustrated when published.

Case 1. Complete cleft palate and hare-lip.

Case 2. Posterior cleft palate only.

Case 3. Anterior cleft palate and hare-lip.

Case 4. Anterior and posterior cleft palate, but without the hare-lip.

Case 5. Short and immovable soft palate.

Case 6. Collapse of the anterior portion of the nose, due to absence of the triangular cartilage.

Case 7. Collapse of the anterior part of the nose, due to lues.

Case 8. Unilateral absence of the ala, due to electric burn.

Case 9. Absence of the pinna, due to epithelioma (post-operative).

Case 10. Same as Case 9.

Case 11. Retro-auricular fistula—post mastoid operation.

Case 12. Neuroplasty for the cure of facial paralysis, due to acute suppurative labyrinthitis.

Case 13. Destruction of the side of the face, due to epithelioma (post-operative).

Case 14. Rhino-phyma.

DISCUSSION

Dr. Otto J. Stein states that the great variety of cases shown here to-night offers a wide field for discussion. The subject of plastic surgery, or reconstructive surgery, is, of course, a vast one and offers a tremendous field for our ingenuity. It is one of special surgery and he thinks Dr. Beck has certainly been fortunate in having this large amount of material to work upon and that his results are certainly excellent as far as one can determine at such a distance. It is rather difficult to form any opinion as to these cases in as cursory manner as seen here to-night. He has seen considerable of Dr. Beck's work, some of the cases before operation, others after Dr. Beck has operated. Dr. Stein realizes that what he has to say on this subject is little from the personal standpoint. He has done very little plastic surgery, having only done it as many do—on the nose, mouth and some cleft palate work and intra-nasal work and some work around the ear, reconstructing the auricle and making parts of noses, but he has not gone into the subject as extensively as Dr. Beck. Plastic surgery, or reconstructive surgery, as it is frequently termed, has received a new impetus in recent years and has been brought to a specialty in itself. John B. Roberts of Philadelphia, who was here some time ago at the Chicago Medical Society, in discussing this subject, showed what a vast field has been opened up by the ingenuity of the surgeon.

It certainly has been demonstrated that all kinds of tissue can be transplanted and even organs have been transplanted, not only from the same individual and

from one part of the body to another, but from one individual or animal to another. Carrel has shown that after putting the carotid of a dog in cold storage for three weeks it can be transplanted into another animal and grown alive there. This shows the tremendous advance that has been made in this line of work. Although, as we know, this work dates back to the Indian period, the art has been lost until recent years, and it requires a knowledge and persistency, such as are possessed by Drs. Roberts and Beck, to bring out the wonderful possibilities this class of surgery possesses.

Dr. Stein would like to ask Dr. Beck what his views are upon the utilization of the Brophy method in cleft palate work as compared to the method used by Brown. He realizes that it was difficult for Dr. Beck to enter into the details of this work in presenting his cases but as the Brophy method has been lauded and used with great success by Dr. Brophy, Dr. Stein would like to know from Dr. Beck's experience what his opinion is as to the selective value of these two different methods of operating.

Dr. A. M. Corwin said that the Chicago Laryngological Society ought to be proud of Dr. Beck and his work. He stated that while this is a distinct department of laryngology involving work that has usually been turned over to the general surgeon, or rather not done at all, he supposed not over 1 per cent., or a half of 1 per cent. of laryngologists will ever enter this special field. Dr. Beck needs no encouragement of this body because his own enthusiasm, his own ambition and his own mechanical genius—it takes all three of these to do this work—have led him far in advance of anything that has been done in this city, so far as Dr. Corwin knows, and the Society simply wished to commend him.

The most interesting case exhibited that evening seemed to Dr. Corwin to be the case in which the skin had been, as he understood, made to serve the purpose of the mucous membrane of the rejuvenated larynx, and that is a very important thing. There are several cases in the Cook County Hospital which Dr. Corwin will take pleasure in referring to Dr. Beck which are along this particular line.

Dr. Beck in closing stated that in answering the question of Dr. Stein regarding the Brophy method, he wished to say that his experience with this method had been very good. There is no one method that can be applied to every case. It is just the particular case, and you frequently employ several methods in that one case. In the baby Dr. Beck presented he was able to pass the wire through and draw it across the front instead of drawing it right through and employing plates like Dr. Brophy recommends—not sticking to the point as laid down. Then again it makes a difference, of course, as to the age of the child. In the new-born Brophy's method is by far the best, but not carried to the full limit. Dr. Beck believes that many fail with this method because they try to do the complete operation at one sitting. For a man who has done so much work as Brophy has he thinks it is a question of his personal ability, and he frequently does the complete operation at one sitting.

Dr. Beck brought this material to the meeting so that men would be stimulated to do this work. This material is running around everywhere and they must pick it up. As a rule, men in this specialty of laryngology pass it by. By doing this it is driven into the hands of men who have not the ability to handle the delicate tissues as the laryngologist is able to do. Most of these cases are combined with interior work in the nose, mouth, throat, and this work surely belongs to oto-laryngologists. The sooner they take it up the sooner it will be a part of oto-laryngology.

Answering Dr. Robertson's question Dr. Beck says that he has injected that case twice since the original operation, but the paraffin has become displaced. That is the one trouble in this case. The act of swallowing displaces the paraffin and it finally becomes a foreign body, which is troublesome. Dr. Beck would warn against injecting too much of it. This woman is now able to make herself understood which formerly she could not do.

There are many points in connection with these cases which Dr. Beck did not have the time to bring out, but he will publish them in detail in the very near

future, illustrating them by means of stereo-photographs, which is a method strongly recommended.

TREATMENT OF FOREIGN BODIES IN THE ESOPHAGUS

E. FLETCHER INGALS, M.D.

CHICAGO

Esophagoscopy is of very great value in the treatment of foreign bodies in the esophagus, but it has not entirely supplanted the older methods. Many physicians from lack of time and opportunity are unable to familiarize themselves with esophagoscopy and must therefore rely upon the older methods in simple cases. The bristle bougie is one of the most generally useful instruments for removing common pins or small fish bones from the esophagus and must generally take precedence over the newer methods, even with those familiar with the latter. The old curved esophageal forceps and straight blunt-pointed strong forceps are also very useful, especially in removing coins or buttons from the esophagus, and may be employed without the aid of the esophagoscope in many instances. There is very great difficulty sometimes in finding even large bodies, as a penny or nickel in the esophagus, hence it will be realized how difficult it might be to discover pins or fish bones.

Formerly, when a foreign body could not be removed through the mouth it was often crowded into the stomach and this is a proper procedure even now in certain cases, especially when the body is not very large and has passed down into the mediastinal portion of the esophagus.

Esophagotomy must sometimes be practiced for large irregular bodies, but it is much more dangerous than esophagoscopy and when the body has passed below the clavicles, unless it can be removed in the latter way, thoracotomy would be suggested, but the results from this operation are usually fatal.

Although the esophagoscope was used by a few persons in Europe from the time of its invention by Kussmaul in 1866 up to the date of Kirstein's paper in 1895, it did not come into great favor until taken up by laryngologists following Kirstein's work from 1896 to 1899. Most of the work since then has been done by laryngologists.

In present esophagoscopy it is of the utmost importance to have the head properly held by an assistant, for if it is slightly out of the correct position the operator is liable to become confused and may be greatly delayed.

The esophagus is not very sensitive unless inflamed, therefore often no anesthetic is needed in adults who are able to tolerate a little pain or discomfort or in children who are small enough to be firmly held. In the latter the discomfort that would be experienced is liable to be much less than that from an anesthetic. A local anesthetic is often sufficient for adults; about 20 per cent. cocain in a 1 to 2,000 of suprarenalin is the best, but cocain in this proportion is too dangerous to be used in any considerable amount in children. Chloroform would be the pleasantest anesthetic but it is much more dangerous than ether, therefore the person who uses it assumes grave responsibility. Complete anesthesia is often necessary, not only for the patient's comfort but to remove spasm and allow the operator to manipulate his instruments easily. It must not be forgotten, however, that profound anesthesia is dangerous in the presence of dyspnea. It should be remembered also that dynamo currents are unsafe for the illumination because of the liability of short circuits. A suitable dry battery like Jackson's is the best source of electricity.

SOME ESOPHAGEAL CASES

STANTON A. FRIEDBERG, M.D.

CHICAGO

This paper deals with the use of the direct speculum and esophagoscope in the removal of foreign bodies and in the diagnosis and treatment of certain esophageal conditions, with cases cited as examples.

The employment of the direct speculum to assist in the removal of foreign bodies lodged in the upper part of the esophagus in children is described and recommended as easier of performance than with the esophagoscope.

Case 1.—Girl, aged one year, with a penny lodged in the esophagus. The end of the speculum was introduced into the mouth of the esophagus and the coin seen about one-half inch below. A long urethral forceps was used in the removal.

Case 2.—Girl, aged 17 months, had swallowed a penny four days before. The same procedure was carried out and the coin easily removed. No anesthetic was used in this case.

Case 3.—Girl, aged 5 years, had swallowed a tin whistle. Two days after the accident the child was placed on the table and an attempt made to remove the whistle without the anesthetic. The foreign body was easily found but the resistance it offered to removal was so great that ether had to be administered. The removal was then easily brought about.

The recovery of all of these cases was rapid and uneventful.

Case 4.—Male, aged 30 years. The history given was that a bone had become lodged in the throat. Examination with the direct speculum showed great edema of the lower part of pharynx of the right side and also of the epiglottis and aryepiglottic fold of the same side. Esophagoscopy was performed without the bone being discovered. Examination several days after disclosed the bone impacted in pyriform fossa whence it was removed by the indirect method.

Case 5.—A child, aged 14 months, had swallowed a metal toy, the exact nature of which was undetermined. After a long search the foreign body was found but could not be removed on account of the resistance it offered. The latter was so great that it was found that the esophagus would be ruptured. A second operation was not permitted by the father who removed the child from the hospital.

Case 6.—Boy about 4 years of age, upon whom a gastrostomy had been performed on account of a stricture of the esophagus due to his having swallowed lye. With a Jackson tube the mouth of the stricture was located and dilated with bougies passed through the tube. Dilatation was then carried on in the ordinary way for several weeks, during which time he improved greatly. He was then taken home and all treatment discontinued. Subsequently he was returned to the hospital and the same procedure was repeated. Before he finally disappeared from observation he was able to swallow meats and other solid food with comparatively little difficulty.

Case 7.—This was a patient with great obstruction to deglutition. An esophageal bougie could not be passed. Examination with the direct speculum showed an irregular mass occupying the mouth of the esophagus. On the posterior wall this mass projected forward in the form of a ledge. This latter prevented the passing of a bougie. With the aid of the direct speculum a small bougie could be passed under the ledge into the esophagus.

DISCUSSION

Dr. H. Stolte, of Milwaukee, states that the society feels greatly indebted to Dr. Ingals for his excellent paper and they regret that these papers are usually not published in journals which are read by the general practitioner. The general practitioner is the man usually who sees the case first, and although esophagoscopy has now been practiced for nearly twenty years, most general practitioners know nothing about it. For that reason they try methods which are absolutely unjustified. They work in the dark, with instruments which are not fitted at all for the purpose, without considering the shape of the foreign body. In this way they lacerate the esophagus, and so it happens that when the case comes to the man who does the work, he gets it in a most undesirable condition—in a septic, highly inflamed condition, so that it is very hard to recognize and find the foreign body.

Dr. Stolte mentioned the case of a woman who swallowed a big piece of bone in eating her soup. She felt at once a severe pain, rushed to a specialist, who tried to convince her that it was just globus hystericus, although she was in

an agony of pain. He tried to do the same thing for two days, pushing a probang up and down, showing that there was nothing there. She came on the third day to Dr. Stolte with a temperature of 103 F., with symptoms of sepsis of the esophageal wall and the mediastinum.

As Dr. Ingals said one often glides over a foreign body without seeing it. Recognizing this, Dr. Stolte used a spatula speculum which leaves open one side of the esophagus, especially as in nearly all cases of this kind the foreign body is located within the mouth or below the mouth of the esophagus. He was able at once to discover the bone, three-quarters of an inch wide and one and a quarter inches long, very sharp, with cutting edges, and also a big gangrenous erosion in the esophagus. He succeeded in removing the bone under anesthesia within a few minutes. After the foreign body was removed the patient was pulled through the very critical situation, as there was a beginning septic mediastinitis. Temperature dropped the next day to 102 F., and within a week the patient was able to swallow without pain. The symptoms gradually disappeared altogether. No stricture was left.

This shows that the general practitioner ought to hear something about these things as often as possible.

Dr. O. T. Freer stated that the difficulty referred to by Dr. Ingals and Dr. Friedberg of having the esophageal tube glide past an undiscovered foreign body, has also been his. In such cases, where the foreign body is situated in the laryngopharynx or behind the larynx it may be made visible by that laryngeal speculum of Brüning's, which has a slender beak about two inches long. With this beak introduced as a lever behind the larynx, the larynx may be lifted forward, so that the laryngopharynx and entrance to the esophagus are widely stretched open to view. A case in illustration: A tailor, whom Dr. Freer saw with Dr. Austin Hayden, had a broken needle lodged in the posterior esophageal wall just below his cricoid cartilage. The esophageal tube slid by this needle without disclosing it, but when the Brüning's speculum was introduced it could be readily seen and extracted.

For illumination in esophagoscopy and bronchoscopy, Dr. Freer uses the Kirstein head lamp fitted with an umbrella filament light bulb, a device which we also owe to the genius of Brüning. In this manner a long pencil of light is obtained of such depth of focus and penetration, that the whole length of the tube, and especially its bottom, are evenly and brightly illuminated. The ordinary horse-shoe filament light bulb, when used in the Kirstein lamp, gives a much longer pencil of light than the head mirror, but it is not so effective as the Brüning bulb.

The long-stemmed little rice grain lamps used in the tube and so easily fouled and burnt out, and Brüning's attachment of the Kirstein lamp directly to the tube, Dr. Freer has not found so good or reliable as the original Kirstein lamp with the Brüning bulb used on the forehead, as a freedom of intra-tubal manipulation is thus obtained which can be got in no other way.

There is one condition where all intra-esophageal manipulation is contra-indicated and the external operation of esophagotomy is the proper one, and that is where a beginning phlegmon behind and beside the trachea in the neck, shows that a foreign body has already perforated the esophageal wall.

Dr. Joseph C. Beck reported two fatalities in his experience this summer in esophagus foreign bodies. He reported them because Dr. Ingals mentioned the fact that these cases are not reported for various reasons. He stated that he was safe in doing this, however. Both cases were the result of the stimulation of publishing in general journals the beautiful instruments, broncho-esophagoscopes, used by general surgeons. Both came to him one week after the foreign body had been in the esophagus. In one case he did not succeed in even passing a tube until after death. The death was on the table. The child had a septic pneumonia, and Dr. Beck was urged by the gentleman who had attempted to remove it to at least make an attempt. This was the case of a penny in the esophagus. On looking in he found a frightful condition of affairs, great traumatism.

The other case, that of a pearl button, had been treated something on the order of the pipe-stem story referred to by Dr. Ballenger. A picture had been shown of the foreign body, and later a medicine given, of a syrupy nature, to dissolve the button. Later an *x*-ray was shown with the button gone. Dr. Beck felt the foreign body and tried his best to remove it, but could not do so with any form of instrument, the tissues were so traumatised. It was finally given up and the child died of a septic infection.

Dr. Beck simply mentions these cases as showing the danger of men doing this work who have not been properly trained and who have not sufficient experience.

Dr. L. W. Dean, Iowa City, Iowa, stated that he wished to report the case of a patient who was unable to swallow even a drop of water. This patient was a woman, about 63 years of age. At the age of 18 she had swallowed some concentrated lye, and since that time had been able to swallow only semi-solid foods. About two days before Dr. Dean saw her she was eating some soft salmon and suddenly found that she could not swallow even a drop of water. She was brought to Iowa City. In the meantime she had been given rectal injections of water, in order to keep up her strength. She was taken to the internist who made a diagnosis of a malignant growth, superimposed upon a cicatricial stenosis of the esophagus. The physician, hearing of the esophagoscope, wished to have an examination made, and with the internist brought the case to Dr. Dean. The esophagoscope was passed, and as soon as the stricture was approached Dr. Dean took one look and then asked the internist, who had never looked in an esophagoscope in his life, to look in and tell him what he saw. He said he saw a vertebra of salmon fitting in the stricture of the esophagus. This was the case. The vertebra fitted the stricture similar to a cork in a bottle. The vertebra was dislodged with a bent probe and readily removed.

A second interesting case that they had was that of a child, 4 years of age, who had never been able to swallow anything except liquids. The passage of the esophagoscope showed a round tumor at the cardiac end of the esophagus, underneath the mucous membrane of the esophagus. It was freely movable. It could be pressed down. The diagnosis made by the internist, surgeon and Dr. Dean was a congenital tumor of the esophagus, simple in nature. The problem presented was the removal of the tumor. Dr. Jepson, the general surgeon, advised the parents to have this patient operated on, and the operation as planned was this: to open the stomach, and after the stomach was opened to have the esophagoscope passed, forcing the tumor, as was thought could be done, into the cardiac end of the esophagus, where it could be grasped by him and removed. Unfortunately, this patient did not return and they were not able to complete their work, in what seemed to them a very interesting case.

Dr. A. M. Corwin stated that the dangers of the operation had been fully pointed out by Dr. Ingals and others but that a case that he remembered seeing years ago shows the danger of delaying removal where a history of foreign body in the esophagus is present. The patient was a well nourished woman with a pulse of 160, nearly in collapse, but not unconscious, with a history of having swallowed a foreign body, a bone of some sort, a week or two before. At first she could swallow ordinary things, but later was unable to swallow even water, and within a few hours from the time he saw her the history was that she suddenly began to swallow again. She was not suffering from great dyspnea at the time, but she said that at the time she began swallowing again she had considerable pain in the chest and shortness of breath. He looked her chest over thoroughly and found the right lung was collapsed and pneumo-sero or pyo-thorax present. He had the patient swallow a very little warm water, which evidently went directly into the pleural cavity through an esophageal ulceration. The woman was in such condition of collapse that the only prognosis was made that could be made, and in order to relieve the condition of infection which was taking place in the chest, an opening was made and a mixture of blood and fluid, pus and food, drawn off from the chest. The patient died within a few hours of septic poisoning, of

course. Nothing could have been done locally by passing tubes in that case. This simply accentuates the need of going after these cases with the *x*-ray in the proper manner, locating the foreign body and removing it before irreparable harm has been done.

Dr. Ingals (closing) stated that the majority of foreign bodies lodge back of the cricoid cartilage. Respiration normally opens the esophagus below the first constriction. He has not attempted to secure any greater dilatation of the esophagus by deep respiration.

The foreign body is firmly grasped by the normal muscular contraction and by the swelling but he has not observed strictures. Spasm of the esophagus is not at all infrequent in such cases, which should be relieved by complete anesthesia, unless there is sufficient dyspnea to contraindicate.

Dr. Friedberg (closing) wished to say a word in regard to spasm of the esophagus. He believes that under deep anesthesia this is overcome, although in one case he saw, that of a marble in the esophagus, anesthesia was not able to overcome contraction of the cardiac end of the esophagus.

Regular Meeting, Dec. 19, 1911

EDELMANN'S ACOUSTICS FOR OTOLOGISTS

J. HOLINGER, M.D.

When we stop to compare the clear optical principles on which the ophthalmologists base their therapy, with the indefinite knowledge of acoustics which we have at our disposal, a book like that of Edelmann on "Acoustics for Otologists," will be a welcome or rather a necessary addition to our library. Edelmann dedicates the book to the memory of Bezold, and I believe that a great deal of the criticism of Bezold's work would have been avoided if the principles of acoustics had been taken into consideration earlier. It was a great satisfaction to see how the unbiased American student at once grasped the importance of Bezold's teachings. Wherever there was reserve or opposition it was easy to trace the cause to influence from abroad. The German student who in his preparatory studies is steeped in Latin and Greek, is and was ill-prepared for the mathematical and physical questions involved. Permit me to cite from literature one example of this kind. A certain German professor in order to prove that the handle of an ordinary tuning fork does not vibrate longitudinally while the prongs vibrate transversely, screwed the handle in a vice, and with the microscope watched some grains of lycopodium powder that he had poured on the stem. Of course he did not see any longitudinal vibrations and for this reason. Suppose you want to study the wagging of a dog's tail, by taking hold of his tail with both hands. The consequence will be, if the dog does not bite you that the tail will wag the dog. Yet this and a number of other equally absurd mistakes did not baffle the professor but induced him to write a lot of insolent general and indefinite criticisms which certainly hurt Bezold's feelings but did not shake the logic of his deductions.

One reason for bringing this up here is the fact that a number of our American colleagues mistook the absence of an answer to many of these criticisms and especially of an answer in the same offensive tenor, for an admission of the weakness of Bezold's arguments, whereas it was simply the answer of a scientist and a gentleman. Whenever he considered an answer necessary in the interest of the cause, he gave it in a scientific, never in an aggressive manner. Another reason for mentioning this matter here is that it caused Edelmann to publish the proofs for his and Bezold's theory of vibration of tuning forks. So it's an ill wind, etc.

The first chapter of Edelmann's book explains the transverse and longitudinal progressing vibrations and the standing vibrations. The transverse progressing vibrations may be produced by striking a tight rope near one end, longitudinal

progressing vibrations by letting a slightly stretched spiral spring snap back. The natural harmonics of a violin string are given as an example of standing longitudinal vibrations.

The next chapter explains a number of technical terms and then shows how we can represent vibrations by drawings, and finally mentions the photograph as the most accurate instrument for this purpose.

Then follows a discussion of clear tones, their strength each and the interval between two tones, the gauging of a normal tuning fork and finally the number of vibrations of the different sounds in Bezold's tone series.

The phenomenon of the interference of two simultaneous sounds is given in the next chapter. After this the mechanism of the tuning fork is discussed. There are three kinds of tuning forks: First, the simple horseshoe shaped steel rod with the same rectangular section throughout; second, the fork with the heavy mass of steel at its arch; third, the fork with weights. The proofs are then given for the fact that a symmetrically constructed fork must show longitudinal vibrations of the handle when the prongs vibrate transversely. This proof is first given theoretically by constructive drawings, then practically by five different experiments. Considerable space has been given these points because they are of utmost importance in the Rinné test and the Weber-Schwabach test. You have often heard the argument that in Rinné's test we compare things that cannot be compared, namely, longitudinal vibrations of the handle transverse with vibrations of the prongs of the tuning fork. Gentlemen, we compare the *time* of the vibrations and here you have the proof that the *time* of vibration of the handle is identical with the *time* of vibration of the prongs, as long as the prongs vibrate transversely the handle must vibrate longitudinally. The matter is very important and I wish to illustrate it by an example: Suppose there were a steam car line and an electric car line from here to Milwaukee, I know that the steam car takes exactly the same length of time to make a certain distance as the electric car does. Yet I find that the steam car always arrives in Milwaukee ahead of the electric car. Now, then, doesn't that give me a right to draw the conclusion that the electric car line either makes a detour, or makes more and longer stops? And in drawing this conclusion do I compare an electric car with a steam car? I do not think so, I only compare the time it takes them to get to Milwaukee, I might as well take two steam cars for the experiment, provided that the crew that runs over the tracks of the electric car has the same instructions as the crew on the electric car. At the end of this chapter proof is given that the transverse vibrations of the handle are due to a symmetry of the metal of the fork.

A very interesting chapter is devoted to the construction of tuning forks free from overtones for the Rinné and Schwabach tests. It begins a discussion of the production of overtones. It was through accident that the possibility of eliminating them was discovered. Bezold had an "A" fork free from overtones which Edelmann with the best of machinery could not duplicate, although Bezold's fork was made by a simple locksmith and by hand. It seemed like the same problem as with the old Italian violins which cannot be imitated. The explanation came with the discovery of a tuning fork that did not sound at all when held in the usual way by the handle. Any fork when laid down so that both prongs and the handle are supported by two pieces of wood will sound if struck in the middle. Edelmann calls this sound "Plattenton," because it is produced in the same way as the sound of a steel plate. If this sound is accidentally the same as the sound of the prongs unsupported, these two sounds kill each other since, according to Pisko, one sound is by resonance transformed in the other and then muffled by the holding hand, and the fork is mute. This principle is used to eliminate the overtones. If this second sound is identical with the first and strongest overtone (the quint of the fundamental tone of the prongs), we have a tuning fork without weights which is for all practical purposes free from overtones. Such a fork will also sound a long time. Bezold's original "A" fork accidentally fulfilled this requirement.

The chapters on Bezold's series of tuning forks offer no new feature for discussion here except that in the lowest forks where adventitious sounds are the most

objectionable, the sound of the handle is eliminated by constructing the weights of the prongs asymmetrically, thus excluding the possibility of a vibration of the handle. The gauging of the Galton whistle proved a very hard task. It was accomplished by means of Kundt's dust figures. The first whistles were not accurate and Edelmann freely admits this. He has constructed a new one. A further chapter on Melde's sounding plates and Koenig's rods I shall skip, as I think they are important only theoretically, The monochord produces longitudinal vibrations, and it seemed for a while as though it were destined to replace the Galton whistle in our hearing tests of the highest sounds. But according to Edelmann it produces so many adventitious noises in the highest pitch for which it is the most important that its value there is questionable.

A chapter on a continuous series of resonators to increase the strength of the sounds and to differentiate the clear sounds is not of sufficient practical value to us here.

Of much greater value are the chapters on rational and objective measuring of the strength of sound and the possibilities of hearing. A general discussion on how to measure anything gives us an insight into principles otherwise foreign to us, but in which Edelmann is authority since I know that in his laboratories his specialty is the manufacture of the finest apparatus for measuring magnetism, electricity, etc. We therefore have to take his word for it if he tells us that an enormous apparatus is necessary for measuring the strength of a sound. The principle in short is this: a normal siren with a certain known number of holes of a definite diameter is turned by a motor having a certain number of revolutions. A current of air is blown with a known pressure against the holes. On account of the extreme sensitiveness of the ear this pressure is often as small as one one-hundredth of one mm. of water. Therefore a special apparatus, a micrometer for air pressure with mirror and telescope, had to be constructed to measure this pressure with an accuracy of one ten-thousandth mm. Edelmann took a series of measurements on his own ears and found that the ear is most sensitive to musical sounds, less so to the lowest sounds and to sounds above c3. The quantitative measurements with this accuracy have of course only scientific value but they show the difficulties we have to face when we want to talk about accuracy. Edelmann proposes as the unit of sound that strength of sound which is created in a normal siren blown against with a current of air whose pressure equals the pressure of a column of water of one-tenth mm. in height. He calls this unit "Phon" (1ϕ) and always adds in parenthesis the pitch of the tone measured. He takes the unit so small in order to avoid decimals. 1ϕ is of course different for each pitch. 2ϕ is not necessarily twice as strong or is not necessarily felt twice as strongly as 1ϕ. The laws of increase have to be studied first. While these instruments cannot be used directly they will be used for gauging handier instruments for practical use. Edelmann offers gauged tuning forks that are suspended from an elastic handle and have a contrivance which indicates the moment the prongs have attained a certain excursion. With a stop watch we note the number of seconds from that moment till the patient does not hear the sound any more. The sound is conducted to the ear through a tube of a certain length and width. A table of figures accompanies each of these forks giving the number of phones of hearing corresponding to each second that has elapsed from the moment of the known excursion till the sound is no longer heard. This gives us figures by which we can not only make a comparison of our own results of hearing tests made at different times, but can also compare them with the results of others. Of course only the number of phones of the same pitch can be compared but each fork has to be separately gauged since the steel differs. It takes a series of these forks of different pitch to test the whole scale.

In order to measure the pressure with which an "A" fork is set on the vertex of a patient in Weber-Schwabach's test, Brüning's handle is advised which indicates directly the pressure used. This seems to be a great advantage.

The last chapter treats of the construction and the use of a mechanically accurate model of the middle ear, about twenty-two times enlarged. It also serves to measure the proportion in which movements of the tympanic membrane

are transmitted to the fluid of the labyrinth. Helmholtz felt the need of such a model. Politzer and Helmholtz began in detail the study of the movements of all parts, but it was Bezold who gave the logical explanation of the whole apparatus by showing that whenever any part of the whole mechanism is out of order, hearing for the lowest part of the sound scale is lost, while hearing of the upper octaves is little or not at all impaired. This changed the general question of the physiology of the whole apparatus, and brought forth the solution which is given at the end of the book and which appears just as clear and simple as it is surprising. In the study of the whole proposition it becomes evident that this solution could only be found by the happy combination of a careful observer and deep thinker such as Bezold, with a practical physicist and eminent mathematician as Edelmann. I may say that the construction of this model was the greatest care of the last months or year of Bezold's life, and when Edelmann finally after many unsuccessful attempts, succeeded, and the result could be deducted, Bezold considered his life's work finished. From actual measurements and calculations it was found that movements of the handle of the hammer of 24 degrees will cause movements of 1 degree on the foot plate of the stirrup. The final paragraph of the book says: "The conclusion of all the foregoing considerations allows us to answer the question," in which ratio are vibrations of the tympanic membrane transmitted to the fluid in the labyrinth? in the following manner. "In the inverse ratio of the specific gravity of the vibrating media."

In closing I wish to add that this work of Edelmann is a collection of papers that appeared in different journals. My paper was written with the object of drawing your attention to the book, and not giving a full account of its contents. A number of interesting facts I could not touch upon at all. This book is another stone of the building of modern otology, for which Bezold furnished the normal and pathologic physiology, Siebenmann the pathology.

DEMONSTRATION OF CASES

Dr. R. H. Good demonstrated the following cases:

Case 1. This patient five years ago accidentally developed what his physician called a carbuncle of the nose, which discharged for six weeks and caused a necrosis of the upper cartilages, and the upper portion of the cartilaginous septum of the nose.

This picture, Fig. 1, shows the deformity of the nose, which, however, on paper does not look nearly as bad as the condition was. He consulted me about five months ago, and stated that he could not mingle in society because his deformity resembled syphilitic noses. He had consulted about twenty rhinologists, and was always advised to leave it alone.

I advised inserting a piece of rib into the nose, through the skin and periosteum, which I elevated above the nasal bones, but found the periosteum very adherent to the tissues where the abscess had been, so that I penetrated same and simply loosened the skin over the depressed area.

I then exposed the seventh rib at the mammary line, pealed off the periosteum, and chiseled out a piece about the size estimated to fill the depression, and immediately inserted it into the nose through the above described incision. I found the piece not large enough, so I took out another piece of rib and placed it underneath the former piece. The nose now appeared perfectly normal to all the doctors present and I sewed the wound subcutaneously, with fine catgut in eye needle, and put on a collodian dressing and plaster paris splint over nose, held in place by adhesive strips. The patient remained in hospital one week. There was absolutely no reaction nor pain at any time after operation.

Figure 2 was taken one week after operation. After the patient had been home two weeks I received a letter from him stating that a depression formed close to the tip of the nose which he would like to have fixed. On examination I found that the pieces of bone had slipped up slightly, Figure 3, and caused the depression at the tip. I was going to inject paraffin, but the patient preferred to have another piece of rib put in, which I did.

This time I made the incision through the skin at the tip of the nose and elevated the skin thoroughly. I now exposed the eighth rib and removed a piece of rib, which I inserted but found it too small, so that I took still another piece and placed it under the former which made a perfect nose, having inserted four pieces of rib. The patient remained in the hospital four days. This is the first time I have seen the patient since the second operation, being two months, and Figure 4 is a picture taken at this time.

Case 2.—Mr. Turk. This patient, Figure A, fell down stairs fracturing his zygomatic process and dislocating his malar bone.

It was six weeks before the patient consulted me, and he said he was obliged to drink heavily to relieve the pain which had been gradually getting worse.

The accompanying photo shows the depressed cheek before operation. I excluded antrum disease and the pain was due to pressure on the infraorbital nerve.

I had three *x*-ray pictures taken, but none of them revealed the exact nature of the fracture. I put the patient to sleep and attempted to pry out the malar bone by putting a heavy urethral sound up the buccal cavity with the end under the malar stump of the zygomatic process, but fortunately failed in doing so.

I then made an incision over the zygomatic process for the purpose of getting under the malar end of the zygomatic process and lift it out and anchor it to the fractured end of the zygomatic process. I, however, found the zygomatic process fractured in two places, leaving a loose piece of bone about three-quarters of an inch long.

I refractured and replaced the malar bone, drilled a hole through the zygomatic process, passed a wire through and let the ends project out through the wound and then tied them over Carter's nasal splint, with which I kept the malar bone in place for ten days. The loose piece was left in place and has united very nicely and the patient has practically a normal cheek.

Case 3.—Figure 5 is the photo of a case of an old fractured nose, which I operated on by fracturing the nasal bones and the nasal processes of the maxillary bones and using Carter's splint to hold it in place. Figure 5 shows the nose two weeks after operation with fairly satisfactory results.

Case 4.—I have here a picture of a young girl, Figure 7, with atrophic rhinitis who has a very flat nose with a large tip. I performed the Carter operation on this patient with very poor results, as seen in Figure 8; picture taken two weeks after operation. It shows a slight improvement and the marks of pressure necrosis from the splint can still be seen as well as the marks from stitch abscess. I would have done infinitely better to have inserted a piece of rib in this case.

REMARKS ON THE DEMONSTRATION OF A MODEL RECONSTRUCTING THE CANALS OF RIGHT AND LEFT LABYRINTHS

(Preliminary Communication)

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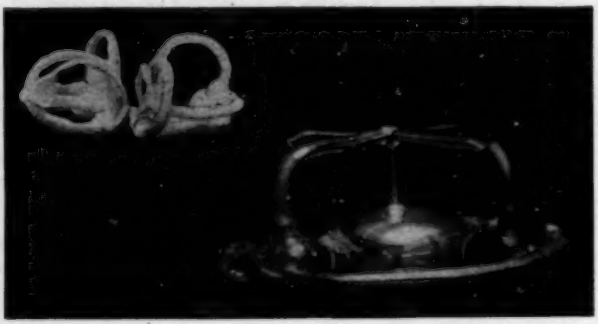
A study of the semicircular canals from the standpoint of their functional conjugations and inter-relations, led me to the construction of a number of models during the past two years, all of which have differed radically from the usual reconstruction in that the grouping together of the vertical canals depends upon a conception of co-respondence quite different from what was taught at that time. According to the other conception of co-respondence, horizontal nystagmus depended upon altered activities in the end-organs of the horizontal canals, rotatory nystagmus upon altered activities in the end-organs of the superiors (or anterior vertical canals), vertical nystagmus upon altered activities in the posteriors (or posterior vertical canals); and further according to the other conception, vestibular imbalance depended upon preponderance of impulses from either the right labyrinth or the left labyrinth, the character of the nystagmus (horizontal, rotatory or vertical) depending upon the individual canal or canals constitutiog the source of the impulses preponderating. Graphic

representation of vestibular balance and imbalance was made by drawing a scales in, and out of equilibrium.

Bearing in mind Ewald's findings concerning effects of endolymph-movements in the horizontal and superior (or anterior vertical) canals, and with due regard to the anatomic relations between the canals of the right and left sides, the old reconstruction of the horizontals is acceptable; the two conjugated canals (right and left horizontals) lie in the same plane, their utricular orifices are opposed, and extraneous influence of a nature to disturb vestibular equilibrium by affecting both sides simultaneously (such as rotation for example) would always affect right and left horizontal canals equally and oppositely.

Not quite so in the case of the superior canals (or "anterior verticals"). Their reconstruction involves coupling together two canals lying in planes at right angles to each other (in antero-dextro-oblique and antero-sinistro-oblique planes of the skull); their utricular openings are opposed *in a way*, though each is 45 degrees off the axis of true diametric opposition. Rotation, however, would not always affect right and left superior canals equally and oppositely; for instance, rotation with the right superior canal in "Optimumlage," i. e., exactly within a plane at right angles to the axis of rotation, would find the left superior canal in "Pessimumlage." Still, by rotating with the head in such a position as to bring right and left superior canals (or "anterior verticals")



in position midway between "Optimum-" and "Pessimum-lage," experiments being results not inconsistent with Ewald's findings.

But how about what we have left, the posterior canals (or "posterior verticals")? Their reconstruction involves coupling together two canals lying in planes at right angles to each other, and their utricular openings are *not opposed*, but are on the *same* (*posterior*) *end*. Rotation affecting these canals must affect them *similarly and not oppositely*.

My inclination has been to look upon the vestibular apparatus as the analog of the "universal joint" of machinery, the latter being devised for the *transmission* of motion in any direction, the vestibular apparatus being devised for the *perception* of motion in any direction.

The skull holds one, and *only one*, vestibular apparatus. It happens that its two halves are not in juxtaposition, but it is none the less a *single organ*. The bone intervening between right and left temporal bones has no connection with the vestibular organ and hence is negligible in this consideration. Let us therefore ignore it and imagine the two halves of the vestibular organ to have been displaced inwards toward one another to a point at which fusion can take place, and we have what is represented in the model herewith presented.

The utricles merge into one; the crures communes co-incide—one crus resulting; the non-ampullar ends of the horizontals anastomose; the canals fall naturally into three conjugate pairs, each pair lying within the same plane, each pair with diametrically opposed utricular openings, the arrangement of each

canal with relation to its co-respondent consistent and identical. And the apparatus is simply and efficiently devised for universal perception of motion.

It has long been known that rotation with head upright or with head bent forwards or backwards, causes nystagmus; and it has been accepted, in explanation of the nystagmus so caused, that it has been due to the creation of impulse-preponderance in the right or in the left labyrinth, as the case may be. In other words, it is caused by upsetting dextro-sinistral balance in the vestibular apparatus. It has also long been known that rotation with head bent over one shoulder causes vertical nystagmus. Just how vertical nystagmus can be caused by this procedure is not at all clear on the assumption that, in order to cause vestibular nystagmus, dextro-sinistral balance in the vestibular apparatus must be upset. In fact, the production of vertical nystagmus by rotation with the head over shoulder *proves conclusively that vestibular equilibrium can be disturbed by upsetting some balance other than dextro-sinistral*, for in this experiment both right and left labyrinths are affected *similarly* and *equally* by that influence *which alone is responsible for the disturbance of vestibular equilibrium*. Only one deduction is possible, namely, that upon *antero-posterior* balance, just as upon *dextro-sinistral* balance, depends maintenance of vestibular equilibrium; or that *antero-preponderance* or *postero-preponderance*, just as *dextro-preponderance* or *sinistro-preponderance* may establish vestibular imbalance.

Instead of representing vestibular balance and imbalance by a scales in, or out of equilibrium, as already shown, the situation might be represented graphically by a two-armed scales, one arm in the antero-posterior direction, the other arm in the transverse or right-and-left direction. Equilibrium would be represented by four five-pound weights, one at each end of each arm; one pound added to or taken from any end causes imbalance.*

Horizontal nystagmus occurs in the plane in which lie the two canals whose altered activities are responsible for the nystagmus. *From the standpoint of the pull responsible for the slow component*, therefore, this motion of the eye-balls must be looked upon as a *simple* motion.

Rotatory and vertical nystagmus on the other hand, do *not* occur in the planes in which lie the canals whose altered activities are responsible for the nystagmus, both vertical forms of nystagmus (so-called "rotatory" and "vertical") resulting from a *summation of impulses*, not from *two* but from *four* (vertical) canals. Rotatory nystagmus occurs when both vertical canals of one side ("superior" or "anterior vertical," and "posterior" or "posterior-vertical") are in similar condition of altered activities ("plus," or "minus"). Vertical nystagmus occurs when both "anterior-vertical" canals (right and left), or both "posterior-vertical" canals (right and left) are in similar condition of altered activities ("plus," or "minus"). *From the standpoint of the pull responsible for the slow component*, therefore, these motions of the eye-ball must be looked upon as *resultant* motions, the slow component in rotatory nystagmus to the left being the resultant of two pulls, one pull obliquely forward and outward to the right in the plane of the antero-dextro-oblique pair of canals, the other pull obliquely backward and outward to the right in the plane of the antero-sinistro-oblique pair of canals; the slow component of vertical nystagmus upwards being the resultant of two pulls, one pull obliquely forward and outward to the right, the other pull obliquely forward and outward to the left.

Reference to the complicating element of voluntary gaze in different types of nystagmus cannot be made in a communication of this brief nature. It will be treated of in a subsequent paper.

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* It will be apparent on closer study of the matter that absolutely correct graphic representation of the conditions of vestibular balance and imbalance involves the construction of a three-armed scales, the first arm in the transverse (or right-and-left) direction of the head, the second arm obliquely forward and outward to the right, 45 degrees off the transverse, the third arm obliquely forward and outward to the left, 45 degrees off the transverse—all three arms lying in the same horizontal plane. Equilibrium would be represented by six 5-pound weights, one at each end of each arm; imbalance would be represented by 1 pound added to or taken from any end (or any two similarly placed ends, as, for instance, the two anterior ends, or the two laterally placed ends of both oblique arms).

Inasmuch as all nystagmus is rotatory, the present terminology seems unfortunate. It would be much clearer to designate nystagmus as "horizontal," "sagittal," and "transverse," according to the plane in which it occurs.

1130 Main Street.

EFFINGHAM COUNTY

Dr. E. W. Brooks of Beecher City, president of the society, has entered into active campaign to improve the attendance and interest in the organization. The following committees have been appointed, and Dr. Brooks is keeping the mails warm with personal letters to every physician in the county urging him to join the society.

Committees appointed for 1912: Program and scientific work: Dr. E. W. Brooks, Beecher City; Dr. C. C. Holman, Effingham; Dr. E. C. Lorton, Shumway. Public press, Dr. F. Buckmaster, Dr. C. F. Burkhardt, Dr. H. Taphorn, all of Effingham. Legislation, Dr. E. L. Damron, Effingham; Dr. L. C. Taylor, Springfield; Dr. Geo. Haumesser, Shumway; Dr. J. C. R. Wettstein, Effingham. Library and post graduate study, Dr. F. W. Goodell, Effingham; Dr. C. D. Simmons, Teutopolis; Dr. J. G. Allen, Edgewood. Public health and hygiene, Dr. E. A. Bing, Altamont; Dr. P. J. Cromwell, Effingham; Dr. T. J. Dunn, Elliotstown. Medical economics, Dr. Holson, Farina; Dr. Henry, Effingham; Dr. Bassett, Farina; Dr. Tinsley, Beecher City. Arrangements and entertainment, Dr. C. F. Burkhardt, Dr. J. H. Walker, Dr. F. Buckmaster, all of Effingham. Medicolegal, Dr. J. H. Walker, Effingham.

MADISON COUNTY

Regular Meeting Jan. 5, 1912

The January meeting of the Madison County Medical Society, held Jan. 5, 1912, at Edwardsville, although zero weather prevailed, was well attended. It was an enthusiastic and highly interesting meeting and every one in attendance felt fully repaid for the time and trouble it cost. Our new president Dr. E. C. Ferguson, presided with his usual grace and dignity and the business of the meeting was soon out of the way. A committee consisting of Drs. Smith, Cook and Pfeiffenberger was appointed to make arrangements for a social meeting and banquet, to be held in Alton, during the month of May. Dr. E. A. Cook introduced a resolution of thanks to the Edwardsville Commercial Club for the free use of its rooms for the several meetings of the society during the past year, which was adopted. Dr. L. G. Burroughs introduced a resolution thanking the press of the county for courtesies extended to us, as a society, in printing notices of meetings, which was also adopted. Dr. F. E. Tully introduced a resolution, which was unanimously adopted, whereby the members of this society placed themselves on record as condemning the action of the city of St. Louis, in trying to dump the garbage of that city, at Stallings, in our county. This was declared not only a nuisance, but detrimental to public health, and our State Board of Health was asked to take such measures as would effectually prevent such injury to our citizens. Dr. Carl E. Black, our principal speaker, was unavoidably detained, but sent Dr. George H. Stacey of the State Hospital at Jacksonville, to read his paper on "Displacement of the Colon." It was a very interesting paper upon the peculiar and unusual subject, and brought on an animated discussion. Dr. Eugene Wahl exhibited an ovarian cyst of considerable size, taken from a patient 16 years old. Our meetings are becoming more instructive all the time.

Regular Meeting, Feb. 2, 1912

The Madison County Medical Society met at Granite City Feb. 2, 1912, with the president, Dr. E. C. Ferguson, in the chair. Present: Drs. Halliburton, W.

H. Grayson, Cook, Oliver, Hirsch, Cowan, Schreifels, Davis W. T., Wedig, Burroughs, Ferguson, Sims, Tully, Scott, Baker and E. W. Fiegenbaum. Visitor: Dr. Geo. B. M. Erwin. On motion of Dr. Cook, Edwardsville was selected as our next place of meeting. Dr. J. Morgan Sims, of Collinsville, read a strong paper advocating the Owen Bill now before congress, aiming to establish a National Health Department. He presented many telling arguments why such a department should be established and urged the members to become a unit in supporting the measure. Dr. Halliburton, of Alton, opened the discussion and expressed the opinion that national reciprocity or possibly international reciprocity might be the result of the enactment of this bill. He closed his remarks by introducing the following resolutions.

Resolved, That the Madison County Medical Society heartily endorses the Owen Bill and hereby calls upon our Senators and our Representative in Congress to use their influence and their vote to secure the enactment of said bill into law, and be it further

Resolved, That our secretary be instructed to transmit a copy of these resolutions to the above named representatives, and also to Senator Owen to show our appreciation of his efforts.

Dr. L. G. Burroughs, of Collinsville, was the next speaker and in a very forceful address advocated the passage of the bill claiming that it would be the first step to secure to the doctor protection from the illegal patent medicine vendor and quack, who now prey upon an unsuspecting and gullible public. He also moved that the members write individual letters to our senators and to Congressman Rodenburg urging them to assist in the passage of this measure by all honest means in their power. After a general discussion of the subject the meeting adjourned to meet in Edwardsville, on March 1.

E. W. FIEGENBAUM, Secretary.

THE OWEN BILL

J. MORGAN SIMS, M.D.

COLLINSVILLE, ILL.

In bringing the Owen Bill before the society to-day, it is not my aim to enlighten you upon a subject of which you have no knowledge, but, if in its discussion we can be made to more fully realize its meaning as regards the health and happiness of this and future generations, then I shall feel grateful. On April 6, 1911, Senator Robt. Owen of Oklahoma introduced into Congress a bill to create an executive department of the Government to be known as the Department of Health. All of you, no doubt, have read the bill, but I deem it expedient that I give you a synopsis of it, reading in full one or two sections relating to its province and duties, for it is in these we are most interested and it is these sections that refute every claim made by those that are opposing the bill's passage. It is as follows:

SECTION 1. Provides for the creation of an executive department to be known as the Department of Health, of which a Director of Health appointed by the President shall be the head.

SEC. 2. Provides for an Assistant to be known as the Commissioner of Health, and for the usual chief clerk and other department employees and for the auditing of accounts.

SEC. 3. This I will read in full: That it shall be the province and duty of the Department of Health to foster and promote all matters pertaining to the conservation and improvement of the public health and to collect and disseminate information thereto. *Provided*—that this act shall not be construed as attempting to authorize the Department of Health to exercise or attempt to exercise without express invitation from the chief executive or other proper authority of the State, any function belonging exclusively to such State, or to enter any premises in any state without the consent of the owner or occupant thereof; but the Director of Health, upon request of the Chief Executive or other proper

authority of any State, Territory or District of Columbia, or any insular possession, may detail for limited periods an officer or officers, employer or employes, from the department of Health to assist the health authorities of such State, Territory, District, or insular possession in protecting and promoting the health of the people of such jurisdiction.

And, *Provided further*, That the department of Health established by this Act, shall have no power to regulate the practice of medicine or the practice of healing; or to interfere with the right of a citizen to employ the practitioner of his choice, within any State of the Union, and all appointments within the Department, shall be made without discriminating against any school of medicine or healing.

SEC. 4. Provides, for the transfer to the new department, the Public Health and Marine-Hospital Service, Bureau of Chemistry in part, the Division of Vital Statistics, the Bureau of the Census, and all those parts of other departments pertaining to public health, except the Medical Departments of the Army and Navy.

SEC. 5. Provides for eight Bureaus as follows: Sanitary Research; Child Hygiene; Vital Statistics; Food and Drugs; Quarantine; Sanitary Engineering; Government Hospitals; Personnel and Accounts.

SEC. 6. Provides that the President is authorized to detail from any of the several departments, officers and employees, when requested by the Director of the Department of Health to carry into effect the purpose and intent of this act, when the same can be done without prejudice to public service.

SEC. 7. The Director of Health may in his discretion and with the approval of the president, appoint an advisory board of not more than seven members to confer with him from time to time as he deems necessary; the members of said board shall be selected by reason of their special knowledge in matters pertaining to public health and for their term of office, salary, etc.

SEC. 8. Provides that the Director of Health may when in his judgment public interest would be promoted, invite the Boards of Health of all or any States, Territories, or District of Columbia (each sending one delegate) to confer with him as an Advisory Board.

SEC. 9. That the functions of the several bureaus are not limited or changed.

SEC. 10. Provides for annual reports of the Director of Health.

SEC. 11. Provides for appropriation to carry into effect the necessary changes.

SEC. 12. For repeal of all acts conflicting with this act.

SEC. 13. Provides that this act take effect after July 1, 1912.

By bringing all bureaus pertaining to public health under one head, the advantages are many and apparent to all who have given the subject any thought whatever. By so doing we will have better organization, which means better work, more work and more accomplished, cheaper administration and less discord. That discord does exist now, is shown by the report of the committee that was appointed to investigate the charges against Dr. Wiley last summer, which in part is as follows: "That discord exists in the Bureau of Chemistry to the extent that it lowers discipline, impairs efficiency and has added cost to administration and will require positive and well considered reorganization to restore the efficient service to which the public is justly entitled." Then with concentration of forces, having a single purpose in mind, we may expect at least an equal show with the veterinary surgeon, who upon application can have the Government examine into any disease which may break out among stock and assist in establishing methods to stamp it out, and prevent its spread. We will have a more rigid enforcement of those laws relating to public health, that we may eventually prevent a condition which one editor in this State speaks of, when he says, "That walking our streets every day are people afflicted with a disease more deadly than leprosy, and this with all our present day knowledge and boastful enterprise." It is not from lack of knowledge that we permit a condition of public places of amusement and public conveyances that scatter contagion and infection which is yearly sending to untimely graves thousands of our people.

It is not from lack of knowledge that we are allowed to eat adulterated foods, tainted meats, or drink tuberculous milk. It is not from lack of knowledge that patent medicines are allowed to be sold, sending thousands of innocent children to an early grave and making drug fiends of hundreds of adults thereby wrecking their lives; the loss of these lives is far dearer to us than the loss of forests or the waste of soil, and yet these conditions have been neglected to a greater extent than has the preservation of our natural resources, our forests, our streams or our soil. The greatest public asset we have is health, yet health and life itself have been sacrificed for the dollar. The very ones that are fighting the passage of the bill are doing so because it will interfere with their money interests, and not because they fear the people's liberty will in any wise be interfered with; not from any patriotic standpoint, not because they fear a doctors' trust will be formed, for the most stupid imbecile with as much as a thimbleful of brains who had ever read the bill would know better. In the first place there will be no bureaus that do not already exist and their functions are not changed in the least. No one has heretofore claimed that they were unconstitutional, or that they aided in the formation of a doctors' trust, and any school boy knows that the Government has no right in any way to interfere with our personal rights, so long as they are not prejudicial to the rights of others. It is a constitutional right in this grand old country of ours that man can serve God after the dictates of his own conscience and choose the doctor he pleases to treat him when sick. If at any time the Government interferes with the liberty of any one in the practice of medicine, it will be the same sort of interference that it makes with counterfeiters or criminals of other character; yet if any one should suggest that all police and detective departments should be abolished because they interfere with the liberty of these people, do you suppose their suggestion would meet with serious consideration? Then let us consider the character of some who oppose the bill. Take the so-called League of Medical Freedom. Who are some of its officers and founders?

B. O. Fowler, president and one of the founders, was president of R. C. Fowler Medicine Co., a patent medicine concern.

R. C. Fowler, its second vice-president and one of its founders, a notorious swindler and gold brick man, a manufacturer of diamonds whose latest arrest was in 1908.

Dr. C. S. Carr of the Peruna Drug Company.

Chas. Huhn, officer in a cooperative patent medicine concern. I could give you many others but these are sufficient to show the character of those who founded the league. One does not have to stretch his imagination to see why they oppose the bill, or to see that it is not the public interest they have at heart. Then I want to urge every doctor of this society to use his every effort in the behalf of the Owen Bill; write or see your congressman and other congressmen that you know, so that when next July shall have come and gone, there will be established at the seat of the Government, a Department of Health, to the end that we will have better knowledge and more rigid enforcement of those laws relating to public health, that we may eventually be able to stamp out all known preventable diseases. Then we can have that freedom God intended us to have, to be free from disease, free to enjoy life, and live its alloted length in health, happiness and contentment.

McLEAN COUNTY

The regular meeting of the McLean County Medical Society was held in Council Chambers, Bloomington, Ill., Jan. 4, 1912, the president, Dr. R. A. Noble, presiding. The minutes of the October, November and December meetings were read and approved. On motion the dues for 1912—local and state—were fixed at $3.50 per member. The board of censors reported favorably on the applications of Drs. E. R. Herrman of Stanford, George H. Small of LeRoy, Wm. T. Williamson

of Lexington, and Charles H. Zorger of Bloomington, Ill. On motion report of board of censors accepted and membership granted to the above named gentlemen. In report of cases Dr. Noble exhibited an appendix of enormous proportions. Dr. E. L. Brown read a very interesting paper on "Cause and Prevention of Puerperal Fever."

While the weather was very cold, yet, old McLean County Medical Society was equal to the occasion and had a good meeting. The other essayist of the evening informed the secretary that he was too busy to write his paper. We have noticed the busy men usually write the best papers. Let us hope the doctor will find time to favor us later. Our membership has increased from 75 to 83.

E. L. BROWN, M.D.

CAUSE AND PREVENTION OF PUERPERAL FEVER

The cause of puerperal fever is always an infection of some wound of the birth canal. This infection may be local or general. Local infection of any wound or the placental site, or of retained clots, may be remedied by local cleansing and disinfection. General infections are those where the germs entering through some wound pass deep into the tissues or the blood stream. These must be fought chiefly by general rather than by local treatment. The infecting agents are varied and often mixed; the chief of these is the streptococcus, occurring in nearly half the cases and always in the more serious cases. Next in order as a causal agent is the colon bacillus. Then the gonococcus and then the staphylococcus, and occasionally a few others.

Since infection always occurs through wound surfaces, then it follows that any methods of preventing unnecessary wounds, or of keeping uninfected the natural or accidental wounds will lessen the number of fever cases.

First then, wounds and their prevention. Wounds may be classified as natural, accidental and intentional. The natural are the placental site, and the minor abrasions of cervix and hymen in primipara. The accidental are the tears we cannot prevent, the ordinary lacerations. The intentional are episiotomy and symphysiotomy.

Wounds of the cervix and perineum are often caused by the extremely strong pains of precipitate labor. These should be avoided if possible by telling woman not to bear down; by giving chloroform enough to lessen the force of the pains; by holding back the birth of the head until the parts soften and dilate easily; and by careful support of the perineum. Wounds are also caused by a malposition of the child. This can sometimes be changed to a more favorable position. A breech presentation can be changed to a vertex, if the waters have not broken. If it can not be turned, the back of the child should be carefully kept uppermost to save trouble in delivery of the head. In vertex presentations a little aid to nature in rotation or tipping of the head will often save both time and trauma.

Then wounds are caused by the shoulder after one has with skill and care gotten the head safely delivered. Usually one can drag the child out by the head easily, but it is not wise to do it. It is better to clean the eyes and nose and wait for the next pain, unless the cord is around the neck making the face blue. Then lift the head forward and support the perineum. It helps often either to keep the anterior shoulder above the pubis until the posterior one is out; or to bring the anterior shoulder well down under the pubis and pressed firmly against it; so that in either case both shoulders should not pass the vulva at the same time.

Wounds are frequently caused by the use of forceps. I consider the forceps to be a means of saving the life or of preventing serious injury of mother or child. But there is always greater danger of bruises and tears when instruments are used. Hence I think their use should be limited to certain indications.

Indications not to use the forceps on the part of the doctor: Because he is in a hurry, or tired, or has a dinner engagement almost due, or just because one can and likes to use them, or perhaps likes more the increased fee he can charge if he does use them.

In all cases where instruments must be used, one should wait until the cervix is fully dilated unless the immediate delivery of the child is urgently indicated. Many times forceps cause needless tears when in their use more strength than skill is applied.

A head that can not be dragged through, may be very easily delivered if one remembers to rotate it as the head descends; or perhaps better, after getting the head loose from or through the narrow entrance or upper straight of the pelvis, remove the forceps and allow the head to rotate itself before re-applying them. Then, too, there is less danger of an external tear if one removes the instruments before the head passes the vulva.

To avoid infection means to keep out all germs so far as possible. To this end the patient, her clothing and her bed should be clean. The physician and nurse should take every care to keep aseptic everything that comes in contact with the vulva. The patient should have at least a local if not a general bath as soon as labor begins. Her bowels and bladder should be emptied. Sometimes one sees cases where the bed is not clean. Even here with a clean sheet or other clean cover for a Kelly pad or a newspaper pad and something clean for a cover for the vulva, it is possible to keep the field of operation reasonably clean. Long hair should be clipped. Gloves should always be worn when making examinations.

Very many cases of infection are due to the examining, therefore one should make as few examinations as is possible and yet keep intelligent control of the case. One should practice making a diagnosis of presentation and position by external abdominal examination.

One's hands should be disinfected as well as the time and accommodation of the place will permit. Then with boiled glove and a lysol solution one need not fear causing harm whatever manipulation may become necessary. Give no post-partum douche unless stitches have been used, and then take special care that both syringe and solutions are sterile. Give the douche yourself unless you have a nurse you know can be trusted to be painstakingly careful. Then to be doubly safe it is my custom to insert a suppository of iodoform and boric acid after each douche.

Regular Meeting Feb. 1, 1912

At the last meeting of the McLean County Medical Society, held Feb. 1, 1912, Dr. E. P. Sloan, Bloomington, read a very interesting paper on "Review of Surgery of 1911," and the following gentlemen were elected to membership in the society: Dr. J. I. Henline, Bloomington; Dr. John J. Condon, Bloomington; Dr. Wm. McIntosh, Anchor, Ill., and Dr. G. W. Rudolphi, Cooksville.

THOS. O. CANTRELL, Secretary.

MORGAN COUNTY

The Morgan County Medical Society met at the Public Library, Jacksonville, Illinois, at 8 o'clock on the evening of Feb. 8, 1912, Dr. George Stacy, vice-president, in the chair.

The subject of the evening, "Kidney Diseases" was presented by Drs. C. E. Cole, George Stacy and F. A. Norris. Dr. Cole presented "Clinical Features," Dr. Stacy "The Pathology," and Dr. Norris "The Surgical Conditions." The manner in which these men presented the subject of kidney diseases reflects credit upon them.

The subject was discussed by Dr. A. L. Adams in relation to eye changes in kidney diseases. Dr. Hairgrove discussed surgical conditions. Drs. Waltman, Hardesty and Crouch, the clinical features.

Members present were: Drs. Stacy, Black, Milligan, Dewey, Ogram, Hardesty, Cole, Adams, Metcalf, Hairgrove, Norris, Woltman, Gregory, Bowe and Treadway.

ROCK ISLAND COUNTY

Regular Meeting, Oct. 17, 1911

The regular bi-monthly meeting of the Rock Island County Medical Society was held at the Manufacturers Hotel, Moline, Tuesday evening, Oct. 17, 1911. Minutes of the August meeting were read and approved. Bill for printing postals ($2.00) was allowed. Announcement was read from the American Red Cross Society regarding the competitive essays of the Russian "Marie Feodorovna" prizes for 1912. A communication was read from Dr. E. W. Weis regarding the Dr. Hubert Work resolution which provided that a membership in the County Society carried with it *ipso facto* a membership in the American Medical Association. This resolution was then adopted. The proposed amendments to the State Medical Society Constitution were read and Drs. First, Lamping, Seids, Bennett, and the secretary were appointed to investigate the same. Drs. Craig, Williams and Bennett were appointed as a committee on the application for membership of Dr. C. J. F. Rochow of Rock Island. Very interesting and entertaining papers were then read as follows: "Korsakows' Syndrome with Synopsis of Cases," Dr. F. B. Clarke, Watertown. "The Word-Association Test," Dr. C. F. Read, Watertown. "Medical Organization," Dr. J. F. Percy, Galesburg. Present: Drs. Eddy, Lamping, Bennett, Ostrom, Norman, Craig, Chapman, Love, Leipold, Ludewig, Williams, Martin, Souders, Clarke, Snively, Asay, First, Foster, Arp, Seids, De Silva, Mueller. Visitors: Drs. Rochow, Rock Island; Percy, Galesburg; Taylor, Moline; Read, Watertown, and Dr. Brubaugh.

ALBERT N. MUELLER, Secretary.

Regular Meeting, Dec. 12, 1911

A regular meeting of the Rock Island County Medical Society was held Tuesday evening, Dec. 12, 1911, at New Harper Hotel, Rock Island. Minutes of the October meeting were read and approved. Dr. First, chairman of the committee on proposed State Constitutional Amendments, reported that our delegates be instructed to vote against all such amendments. Carried. The application of Dr. C. J. F. Rochow was presented and he was unanimously elected to membership. Applications from Drs. C. E. Donahoo, East Moline; H. J. Smith, Watertown; L. C. Moore, Reynolds, and M. C. Hawley, Watertown, were read and committees appointed. Drs. Ludewig, Snively and Wright were appointed to draw up appropriate resolutions on the death of Dr. W. B. Martin of Sherrard. Bills from the Manufacturer's Hotel and Hensley, florist, were allowed. Dr. Eddy reported that Mrs. W. B. Martin wished to extend the society her thanks for flowers and assistance rendered in her late sorrow. Dr. E. M. Sala then read a paper on "European *X*-Ray Work." This was followed by a paper on "Pellagra" by Dr. F. B. Clarke. By unanimous vote it was decided to accept Dr. Johnson's invitation to hold the next meeting (February) at East Moline. Present: Drs. Ludewig, Souders, Eddy, Sala, Love, Leipold, Peterson, Lamping, Clarke, First, Snively, Chapman, Craig, Johnson, Norman, Wright, Seids, De Silva, Arp, Bennett, Mueller. Visitors: C. E. Donahoo, East Moline, M. C. Hawley and H. J. Smith, Watertown.

ALBERT N. MUELLER, Secretary.

SANGAMON COUNTY

The regular annual meeting of the Sangamon County Medical Society was held at the Lincoln Library, Monday, Jan. 8, 1912, when the following officers were elected: President, S. E. Munson; vice-president, C. P. Colby; secretary-treasurer, H. C. Blankmeyer; delegate to state society, S. E. Munson.

Dr. L. C. Taylor demonstrated an interesting specimen of tumor of brain.

STEPHENSON COUNTY

The Stephenson County Medical Society held its annual meeting at the Freeport Club, Freeport, Ill., Feb. 13, 1912. It was preceded by a luncheon which was attended by twenty-seven physicians from Freeport and adjoining cities. The guest of honor was Dr. Carl Black of Jacksonville, who read two papers. Dr. R. J. Burns was chosen president of the society, Dr. J. Sheldon Clark, secretary, and Dr. D. C. L. Mease, delegate to the meeting of the Illinois State Medical Society.

A resolution was adopted instructing the delegate to the state meeting to support Dr. Black's proposed amendments to the constitution, which are designed to prevent the Chicago members from dominating the society.

UNION COUNTY

At the annual meeting of the Union County Medical Society, the following officers were elected: President, Dr. L. J. May, Cobden; vice-president, Dr. A. J. Lyerle, Jonesboro; secretary-treasurer, Dr. E. V. Hale, Anna; board of censors, Dr. S. C. Martin, Anna; Dr. J. J. Lence, Jonesboro; Dr. W. E. Lingle, Cobden. Delegate, Dr. E. Vincent Hale, Anna.

VERMILION COUNTY

The February meeting held in the City Council chamber, Feb. 12, 1912, was called to order by President Dr. L. B. Russell, at 8:30 p. m. The minutes were read and approved as read. The application of J. H. LaGrange was not voted upon owing to the fact the censors were not ready to report. The scientific program was then opened by Dr. Robt. Clements on the subject of "Some Laboratory Work (with demonstration) the Practitioner Should Know."

Dr. Clements took up the various tests of urine for sugar, albumin, bile, indican, etc., demonstrating each to the society. He talked at length on the use of the microscope in examining the urine. Referring to the staining of tubercle bacilli he pointed out why many fail in getting results.

Dr. A. M. Miller opened the discussion.

Dr. Leo. V. Fairhall read a very interesting and instructive paper on "Serum and Vaccine Treatment." In this paper he touched upon the specific nature of anaphylaxis and the toxic principle of proteins. There were many valuable new points brought out.

Dr. E. E. Clark gave quite a lengthy discussion on this paper, relating in an interesting manner a number of cases in which he has made use of the vaccines. Dr. Clark makes his own vaccines. Owing to the late hour we adjourned, without further discussion. Number present 28.

SOLOMON JONES, Secretary.

WILLIAMSON COUNTY.

The Williamson County Medical Society met in the City Hall in Marion, January 23 at 1 p. m., Dr. Vick presiding. Minutes of the previous meeting were read and approved. The following physicians were present: Drs. Perry, Boles, Walker, Springs, Clark, Hartwell, Casey, Hiller, Edwards, Vick, Parmley, V. A. Baker, Miller. The president appointed for the board of censors for 1912, I. C. Walker, A. M. Edwards, W. H. Perry. The board of censors presented the applications of three physicians: G. C. Chamness, Frank Deason, A. C. Ragsdale, and all were unanimously elected members of the Williamson County Medical Society. A motion was made that we elect Dr. F. D. Clark, who is 74 years old

and retired, an honorary member of the society. This motion carried and Dr. Clark was unanimously elected an honorary member.

Dr. Boles lead an interesting discussion on the "Non-Surgical Treatment of Inguinal Hernia," after which Dr. Walker read a paper on the "Surgical Treatment of Inguinal Hernia." The subject of hernia proved to be one of much interest, and many helpful points were brought out in the two able papers and the general discussion which followed their reading.

Book Notices

THE SURGICAL CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago. Volume I. Number I. Octavo of 133 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1912. Published Bi-Monthly. Price per year: Paper, $8.00. Cloth, $12.00.

We have received the first number of Dr. Murphy's Surgical Clinics, and have enjoyed reading it from cover to cover. It brings as near as written language can bring the reader into intimate relation with the distinguished Chicago Professor of Surgery. None of our readers pretending to be in touch with the current surgical thought of the day can afford to be without this periodical, which we understand will be issued every other month. Dr. Murphy's distinguishing characteristic is his ability to impart knowledge to his hearers.

THE PHYSIOLOGY OF FAITH AND FEAR, or, The Mind in Health and Disease. By William S. Sadler, M.D. With numerous drawings. A. C. McClurg & Co., Publishers, New York, Chicago, San Francisco. $1.50 net.

This excellent popular work is the third in Dr. Sadler's series of medical books for the layman. Although the great wave of mental healing which has passed over the country has familiarized the public more or less with the various methods followed, still there is much misapprehension of the subject. Dr. Sadler has written this book to take up the matter of mind-cure from every side and present it in popular language. He not only discusses the rôle the mind plays in healing, but the bodily factors as well, and his positions on both psychology and physiology have been endorsed by leading representatives of those sciences. The doctor is committed to no psychic cult or ism, but he freely and in an unbiased manner discusses the fundamental laws and underlying principles of mental healing. The psychology, the physiology, and the therapeutics of the mental states are fully and plainly presented. The latest practical methods of psychotherapy are fully treated. Many original diagrams and illustrations serve to make the text additionally clear even to the uninstructed layman.

THE TAYLOR POCKET CASE RECORD. The Medical Council Co., 42nd and Chestnut Streets, Philadelphia, Pa. Price, $1.00.

Under this title Dr. Taylor has arranged an excellent manual and blank forms for the use of physicians which we can recommend very highly. It is preceded by a syllabus probably adopted from Strumpell's German work which in itself is worth the price of the book, and which if conscientiously and intelligently followed will assist every practitioner in making a complete and accurate diagnosis. Card systems are good but not available for bedside work but the Taylor Record can be used under all circumstances and places.

BLAIR'S POCKET THERAPEUTICS. Thomas I. Blair. Price, $1.00.

This is a companion to the Pocket Record and equally as valuable. It is brought right up to date and contains many valuable suggestions for the treatment of all ordinary diseases. The advice given is conservative and sufficiently varied to prevent routine practice.

NEWS OF THE STATE

NEWS

—The entertainment of the Infant Welfare Society, February 14, at the Marquette Club, Chicago, netted $2,000 for the association.

—Tuberculosis Day was held in Joliet, February 14, and a meeting in the Joliet Theater, under the auspices of the Joliet Antituberculosis Society, was addressed by seven physicians.

—The trustees and medical board of St. Lukes Hospital, Chicago, gave a dinner, February 10, at the Chicago Club, in honor of Dr. John E. Owens, who on that day completed his fiftieth year in the practice of medicine.

—Dr. Woodside of Johnston City had the misfortune of losing his office by fire February 3. He has made arrangements for a successor and expects to sail the first of March for a year's postgraduate in Vienna, Paris, Berlin and London.

—The management of the Oconomowoc Health Resort announces the opening of a new building. The new part comprises twenty-five guest rooms and a gymnasium. Eight rooms with special baths and private porches have been isolated for the care of acute mental cases.

—The officials of the Suburban Hospital Association, Oak Park, announce that in a short time work will be begun on the new hospital on Ontario Street and Austin Avenue, as the suit brought by property owners has been decided in favor of the Hospital Association.

—The Medical Womans Club of Chicago has completed arrangements for a bureau of information which will supply free of charge reliable information and advice regarding the welfare of mothers and children. The bureau will be operated in connection with the John Crerar Library.

—John P. Riggs, M.D., of Media, Henderson County, Ill., has entered the contest for the Fourteenth Congressional nomination against the Hon. Clyde H. Tavener. Dr. Riggs is well known also in Warren County, where he spent many years practicing as a veterinarian before moving to Media.

—Dr. John W. Wainwright of New York has purchased two medical journals, the *American Practitioner and News* of Louisville, Ky., and the *New England Medical Monthly* of Boston, and will combine these two journals into one, giving the new one the title of *The American Practitioner,* incorporating, etc., and issue from New York City monthly, the first appearing March, 1912.

—The real merits of "Faith Healer" Bill Smith's work lie in the fact that out of the large number he treats with his hocus-pocus-presto-change treatment, he is able to impress on the limited gray matter in the domes

of a few chronic hysterics, mostly females, the important fact that their ills are only imaginary; hence they take up their beds and go forth praising the name of Billy Reuben Smith forever and forever.

—At the annual meeting of the Chicago Tuberculosis Institute, held January 20, directors were elected, including Drs. Robert H. Babcock and Frank S. Johnson, and the plans of the institution for the year were announced, namely, to gain the cooperation of employers of labor so that the employees of all kinds can be examined for tuberculosis and to have a traveling exhibit bearing on the nature, prevention and care of tuberculosis, shown in the central locations of the city.

—Dr. W. A. Mudd of Athens, Menard County, was attacked, February 9, by one Mack Thomas, and seriously stabbed on the head and body. Dr. Mudd had been treating the wife of this man, and had no intimation that there was any hard feeling toward him. He was seated in the blacksmith shop where he had gone to have his horse shod, when Thomas approached him under the influence of liquor, and without warning made the attack. Happily the injuries were not serious and Dr. Mudd will be able to resume his practice.

—The State Board of Administration, the State Charities Commission, the State Civil Service Commission and the superintendent of the seventeen state institutions of the charitable group at a meeting held in Springfield, February 8, recommended that the state should create a distinctive class of nurses especially trained for state service in the care and treatment of the insane, and appointed a committee consisting of Drs. William L. Athon, Anna; Sidney D. Wilgus, Hospital; and Eugene Cohn, Peoria, to outline a constructive course of study for nurses in hospitals for the insane, to report at the November conference.

PERSONALS

DR. SAMUEL M. WYLIE and wife, Paxton, have left for southern Alabama.

DR. W. W. WOOLEY, Peoria, who has been ill with rheumatism, is convalescent.

DR. LEWIS L. MCARTHUR, while operating, February 16, at Michael Reese Hospital, was robbed of his watch and chain, a valuable ring and a considerable amount of money.

DR. J. B. MURPHY, Chicago, recently returned from a trip to Cuba and the Canal Zone. While in Havana he was tendered a banquet by the local profession.

REMOVALS

Dr. Alice B. Brown has removed from Chicago to Winnetka.

Dr. Omar Rees has removed from Ogden to Knightstown, Ind.

Dr. C. W. Page has removed from Milford to Greensburg, Ind.

Dr. Edith B. Lowry has removed from 39 West Adams Street, Chicago, to St. Charles, Ill.

Dr. Margaret B. Thompson has removed from 3302 Cottage Grove Avenue, Chicago, to Phoenix, Ariz.

Dr. F. W. Kerchner has removed from Glen Carbon to Prairietown, Ill. (P. O. Dorsey, Ill., R. F. D.).

NEW INCORPORATIONS

Lakeside Hospital, Chicago; capital increased from $75,000 to $200,000.

PUBLIC HEALTH

—Vital statistics in Illinois have never been accurate or complete enough to secure recognition from the United States Census Bureau as a "registration state." It may not be generally known that a person may be born, live for years, die and be buried, in many counties in this state without any official record of those primary facts as to his existence. Cities of the state having ordinances requiring the filing of a death certificate before a license can be issued permitting burial, secure the data as to death and are therefore recognized as registration cities by the Census Bureau. The recording of births is far less complete than the records of deaths. The Cook County Board of Commissioners have not, previous to this year, appropriated any funds to pay for recording birth certificates as required under the law of 1903. As a result less than 40 per cent. of the births in Cook County have been recorded. The theory that physicians were bound by ethics and their duty to their patients to report births without pay has induced many to make the reports even when they felt that it was an imposition. Now comes the supreme court of Ohio in *State* v. *Boone,* 95 N. E. R. 924, and holds that the requirement that a physician or midwife report births or deaths in the detail required in the Ohio certificates is unconstitutional and void. Apparently the court would hold a simpler report legal but drew the line at details which the physician could not furnish of his own knowledge. Further, that under the guaranties of the Great Charter of the Northwest Territory the state had no right to draft a citizen into particular service without substantial compensation.

The English law places the onus of reporting births on the parent and house-holder and only indirectly on the physician who can generally avoid any penalty by claiming that he had reason to believe the parent had made the report.

The Cook County Board, in its budget for 1912, appropriated $5,000 for the payment for birth certificates recorded within thirty days of the births during 1912. While this will not, of course, be enough to pay for all the certificates that will be offered, it will show that the board recog-

nizes the principle and no doubt funds will be provided later to pay any further legal claims that arise. It will also place the reporting of births on an equitable basis which should be recognized by the profession.

HAS NO BIRTH RECORD; BARRED

WHY A NEW HAMPSHIRE MAN IS HAVING TROUBLE TO TAKE AN OFFICE

[*By the Associated Press.*]

Manchester, N. H., Jan. 4.—George A. Wagner of this city has struck a peculiar obstacle in the preliminaries necessary to his taking the office of probate judge, to which he was recently elected. He cannot find any record of his birth, and the law requires that a certificate of birth must be filed with the secretary of state before a judge can be commissioned.

Mr. Wagner has always been led to believe that he was born in Manchester, May 28, 1873. His parents told him and he has seen it so stated in print many times, but when he called at the office of the city clerk he was told that there was no record of his birth on file there.

The above is only one of the many instances each year where failure to register a birth causes serious trouble.

How about your children? Are their births registered? If not, you are not treating your children right.

An official birth record is best proof of legitimacy, of descent, of right to inherit and of age for schooling, for work, for voting and for marriage.—*From Bulletin Chicago Department of Health.*

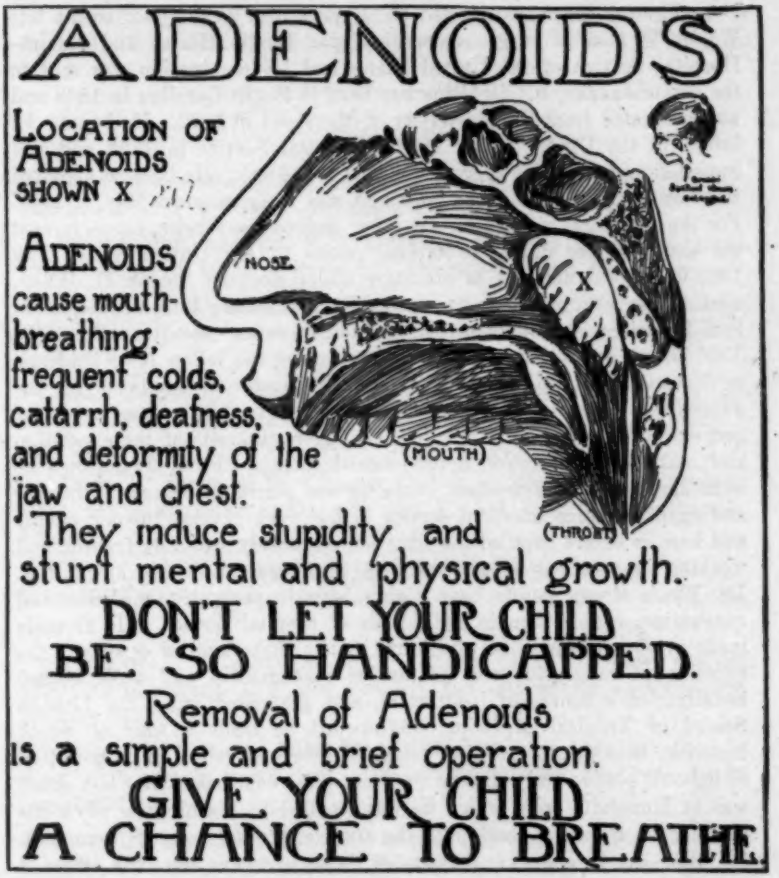
—The throat of the young child is surrounded by a ring of lymphatic tissue, consisting of glands and vessels. The ring contains three principal groups: (1) adenoids, located in the vault of the pharynx; (2) the tonsils, lying between the pillars of the fauces; (3) Luschka's tonsil, at the base of the tongue. In the normal throat none of these glands is developed enough to project into the cavity of the throat and their exact function is a mooted question.

In a certain percentage of children, the adenoid and tonsil tissue develops excessively from the second to the fifth year. It is generally agreed that this tissue, when excessive in amount, forms a favorable site for the growth of bacteria, thus rendering the child more susceptible to the attack of the contagious diseases, and at the same time makes the prognosis of these diseases more unfavorable.

The symptoms of adenoids are dependent on their *size in relation* to the capacity of the nasopharynx and to their *position in relation* to the postnasal Eustachian orifices. Thus, if the adenoid obstructs the free passage of air through the nasopharynx, the child becomes a mouth-breather, and the irritation due to breathing air not properly humidified causes congestion of the mucous membrane from the mouth to the bronchial tubes. If even a small adenoid growth so presses on the Eustachian prominence or orifice as to interfere with the normal function of that tube, the ventilation of the middle ear is obstructed and ear symptoms follow. Thus the child, besides having one of its five senses directly impaired, has all its functions interfered with through the diminished supply of air. The excessive secretion of mucus in the throat,

nose and bronchial tract is a common symptom of adenoids. Disuse of the nasal passages for breathing on account of blocking up of the naso-pharynx causes an atrophy of the nasal structures with a "flatness" of the face that is characteristic.

The effect of adenoids on mental action has been noted by teachers generally in the past few years. L. P. Ayres, in "Laggards in Our


ADENOIDS
LOCATION OF ADENOIDS SHOWN X
ADENOIDS cause mouth-breathing, frequent colds, catarrh, deafness, and deformity of the jaw and chest.
They induce stupidity and stunt mental and physical growth.
NOSE
X
(MOUTH)
(THROAT)
DON'T LET YOUR CHILD BE SO HANDICAPPED.
Removal of Adenoids is a simple and brief operation.
GIVE YOUR CHILD A CHANCE TO BREATHE.

Schools," notes a retardation of 14 per cent. in children with adenoids, as compared with normal children. Of the school children examined for physical defects in our schools in 1909, thirty-three in each 1,000; in 1910, thirty-nine, and in 1911, forty-seven per 1,000 were found to have adenoids. How much of expense does this mean to the city for those victims who remain in school longer than their normal classmates to make the grade? How much of a handicap are the wasted efforts and

deficient education to those who give up the unequal struggle and drop out? These questions deserve careful study. The least a parent can do when notified that his child has this handicap is to consult his physician with a view to having the growth removed. The cut (on this page) of the *Bulletin* is reproduced from one of the educational posters of the Department.—*From Bulletin, Chicago Department of Health.*

—The president has selected Dr. Rupert Blue as successor to the late Walter Wyman as surgeon-general of the Public Health and Marine-Hospital Service of the United States and his nomination was sent to the senate January 9. Dr. Blue was born in South Carolina in 1868 and was graduated from the University of Maryland in 1892. He became an intern in the United States Marine-Hospital Service in 1892 and was commissioned assistant surgeon on March 3, 1893. He became a passed assistant surgeon four years later and was made surgeon May 1, 1909. For the first eight years after Dr. Blue entered the service, he performed the usual service duties at various points in the United States. In 1903-04 he was detailed as executive under Surgeon Joseph H. White, who was in charge of the operations in eradicating bubonic plague in San Francisco, and there proved his ability as an executive officer. In 1905 he was detailed as a district officer during the yellow fever epidemic in New Orleans, and in 1907 served as director of sanitation at the Jamestown exposition and here again showed his ability as an organizer and executive officer by reconciling the divers interests at the exposition and making its sanitation a pronounced success. From Jamestown he went again to San Francisco, where he was placed in charge of the city and again rendered excellent service in the work against bubonic plague and here as before handled the situation admirably, avoiding friction and working in excellent accord with the municipal and state authorities. Dr. Blue's strong points have always been in preventive medicine and quarantine, rather than in the details of hospital service. He recently made a tour of inspection of Europe, in which he studied especially the question of emigration and quarantine management and while abroad he attended a course of lectures at, and graduated from, the London School of Tropical Medicine. Afterward he made a tour of South America, in which he studied the possibility and routes of importation of bubonic plague and yellow fever from these countries. His last detail was at Honolulu, from which he was recalled to Washington when the question of the successorship to the surgeon-general became prominent. Dr. Blue has an engaging personality, is an excellent executive officer, a good organizer and has to a marked degree the faculty of making friends and of reconciling opposing interests.

MARRIAGES

OLIVER J. FLINT, M.D., to Miss Josephine Stoody, both of Princeton, Ill., January 12.

JOHN MOCKLER CONROY, M.D., to Miss Agnes Jane O'Connor, both of Chicago, January 15.

FRANTZ H. HARMS, M.D., Chicago, to Mrs. Elsie Junk Reed, at Waterloo, Iowa, January 9.

GEORGE FREDERICK SORGATZ, M.D., Springfield, Ill., to Miss Katherine Wyth of Cedar Falls, Iowa, recently.

JOHN U. DAY, M.D., Jacksonville, Ill., to Mrs. Bertha Bailey of Ashland, Ill., at Tallula, Ill., January 31.

DEATHS

CHARLES LIESSMANN, M.D., Bennett Medical College, Chicago, 1901; died at his home in Chicago, February 7, aged 51.

JOHN P. MCCULLOUGH, M.D., Hahnemann Medical College, Chicago, 1891; died at his home in Paris, Ill., January 22, aged 43.

CHARLES A. DEWEY, M.D., Hahnemann Medical College, Chicago, 1881; died at his home in Chicago, January 23, from myocarditis, aged 55.

HAMPTON STOKES (license, years of practice, Illinois, 1877); a pioneer practitioner of White County; died at his home in Carmi, January 1, aged 70.

ALICE R. HELD, M.D., Chicago College of Medicine and Surgery, 1907; of Chicago; died in that city, Dec. 7, 1911, from lobar pneumonia, aged 40.

AMOS CAMP HALL, JR., M.D., Hahnemann Medical College, Chicago, 1889; died at his home in that city, January 14, from pneumonia, aged 51.

WILLIAM E. CHALSTRAN, M.D., Keokuk (Iowa) Medical College, 1898; of Galesburg, Ill.; died recently and was buried at Galesburg, January 31.

JOSEPH W. EDWARDS, M.D., Rush Medical College, 1854; a veteran of the Civil War; was found dead in his office in Toulon, Ill., January 13, from heart disease.

JOHN H. JACKSON, M.D., Cleveland University of Medicine and Surgery, 1874, died at his home in Peoria, Ill., January 12, from cerebral hemorrhage, aged 62.

HARRIET AVIS YERGIN, M.D., Hering Medical College, Chicago, 1908; of Sterling, Ill.; died in Mercy Hospital, Clinton, Iowa, January 15, from pneumonia, aged 48.

ISAAC POOLE, M.D., Berkshire Medical College, Pittsfield, Mass., 1862; a surgeon in the Navy during the Civil War and the oldest practitioner of Evanston, Ill.; died at his home in that city, January 24, aged 74.

JANE SPENCER MILLER, M.D., Homeopathic Medical College of Missouri, St. Louis, 1880; died at the home of her daughter-in-law, in Moline, Ill., January 9, from senile debility, aged 78.

BROWN FRED SWIFT, M.D., Rush Medical College,1895; formerly a member of the American Medical Association; died at his home in Chicago, January 19, from pneumonia, aged 42.

S. DARWIN SMITH, M.D., Chicago Homeopathic Medical College, 1896; a member of the Illinois State Medical Society; died at his home in Rushville, Ill., January 20, from heart disease, aged 41.

PETER F. THORNBURG (license, years of practice, Illinois, 1877); formerly a clergyman of the Methodist Episcopal Church; died at his home in Martinsville, January 23, from senile debility, aged 86.

HORACE GRIFFIN ANDERSON, M.D., Rush Medical College, 1890; a member of the Illinois State Medical Society; died at his home in Chicago January 2, from nephritis, a few days after a surgical operation, aged 52.

CHARLES E. DOWNEY, M.D., Northwestern University Medical School, Chicago, 1894; from 1896 to 1900 coroner of Will County, Ill.; died at the home of his parents in Joliet, January 21, from myocarditis, aged 40.

LAWRENCE A. BRUMLEVE, M.D., St. Louis College of Physicians and Surgeons, 1901; a member of the Illinois State Medical Society; for two terms coroner of Effingham County, Ill.; died at his home in Teutopolis, January 19, aged 32.

MARTIN HEKTOEN, M.D., Rush Medical College, 1899; for more than twelve years assistant physician at the Kankakee (Ill.) State Hospital and for some time past night physician in that institution; died at his home in Hospital, January 29, from pneumonia, aged 43.

R. M. C. THROGMORTON, M. D., died at Herrin, Ill., January 24, aged 46. He had been in ill health for about a year. The immediate cause of his death was tubercular meningitis. Dr. Throgmorton had been practicing medicine in Herrin for ten years. Funeral services were held Thursday, January 25, under the auspices of the Masonic and Odd Fellow lodges. Dr. Throgmorton was graduated from the St. Louis College of Physicians and Surgeons in 1898.

JOHN A. HOFFMAN, M.D., of Pesotum, died at the Burnham Hospital in Champaign, February 14. Dr. Hoffman had cholelithiasis with perforation and gangrene of the gall-bladder; he was 44 years of age, a graduate of Miami College, Cincinnati; a member of the Champaign County, Æsculapian District, Illinois State and American Medical associations. He had been elected alternate to the House of Delegates of the State Society.